



TUGAS AKHIR KOMPREHENSIF
TUGAS AKHIR

SANDESTA PRIMA AKSAH
41516010037

PROGRAM STUDI TEKNIK INFORMATIKA
FAKULTAS ILMU KOMPUTER
UNIVERSITAS MERCU BUANA
JAKARTA
2020



TUGAS AKHIR KOMPREHENSIF

Tugas Akhir

Diajukan Untuk Melengkapi Salah Satu Syarat
Memperoleh Gelar Sarjana Komputer

Oleh:

SANDESTA PRIMA AKSAH
41516010037

PROGRAM STUDI TEKNIK INFORMATIKA
FAKULTAS ILMU KOMPUTER
UNIVERSITAS MERCU BUANA
JAKARTA
2020

LEMBAR PERNYATAAN ORISINALITAS

Yang bertanda tangan dibawah ini:

NIM : 41516010037

Nama : SANDESTA PRIMA AKSAH

Judul Tugas Akhir : Tugas Akhir Komprehensif

Menyatakan bahwa Laporan Tugas Akhir saya adalah hasil karya sendiri dan bukan plagiat. Apabila ternyata ditemukan didalam laporan Tugas Akhir saya terdapat unsur plagiat, maka saya siap untuk mendapatkan sanksi akademik yang terkait dengan hal tersebut.

Jakarta, 26 Agustus 2020



SANDESTA PRIMA AKSAH

SURAT PERNYATAAN PERSETUJUAN PUBLIKASI TUGAS AKHIR

Sebagai mahasiswa Universitas Mercu Buana, saya yang bertanda tangan di bawah ini :

Nama Mahasiswa : Sandesta Prima Aksah
NIM : 41516010037
Judul Tugas Akhir : Tugas Akhir Komprehensif

Dengan ini memberikan izin dan menyetujui untuk memberikan kepada Universitas Mercu Buana **Hak Bebas Royalti Noneksklusif** (*None-exclusive Royalty Free Right*) atas karya ilmiah saya yang berjudul diatas beserta perangkat yang ada (jika diperlukan).

Dengan Hak Bebas Royalti/Noneksklusif ini Universitas Mercu Buana berhak menyimpan, mengalihmedia/formatkan, mengelola dalam bentuk pangkalan data (*database*), merawat dan mempublikasikan tugas akhir saya.

Selain itu, demi pengembangan ilmu pengetahuan di lingkungan Universitas Mercu Buana, saya memberikan izin kepada Peneliti di Lab Riset Fakultas Ilmu Komputer, Universitas Mercu Buana untuk menggunakan dan mengembangkan hasil riset yang ada dalam tugas akhir untuk kepentingan riset dan publikasi selama tetap mencantumkan nama saya sebagai penulis/pencipta dan sebagai pemilik Hak Cipta.

Demikian pernyataan ini saya buat dengan sebenarnya.

Jakarta, 26 Agustus 2020



Sandesta Prima Aksah

LEMBAR PERSETUJUAN PENGUJI

NIM : 415116010037
Nama : Sandesta Prima Aksah
Judul Tugas Akhir : Kompre

Tugas Akhir ini telah diperiksa dan disidangkan sebagai salah satu persyaratan untuk memperoleh gelar Sarjana pada Program Studi Teknik Informatika, Fakultas Ilmu Komputer, Universitas Mercu Buana.

Jakarta, 26 Agustus 2020



(Dr. Ida Nurhaida)
Ketua Penguji



(Dr. Mujiono., MT)
Anggota Penguji 1



Herry Derajad Wijaya S.Kom., MM

(Herry Derajad Wijaya, S.Kom.,
MM)
Anggota Penguji 2

Mengetahui,

LEMBAR PENGESAHAN

NIM : 41516010037
Nama : Sandesta Prima Aksah
Judul Tugas Akhir : Tugas Akhir Komprehensif

Tugas Akhir ini telah diperiksa dan disidangkan sebagai salah satu persyaratan untuk memperoleh gelar Sarjana pada Program Studi Teknik Informatika, Fakultas Ilmu Komputer, Universitas Mercu Buana.

Jakarta, 26 Agustus 2020

Menyetujui,

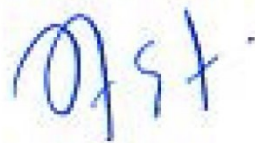


(Dr. Devi Fitriana, S.Kom., MTI)
Dosen Pembimbing

Mengetahui,



(Diky Firdaus, S.Kom, MM)
Koord. Tugas Akhir Teknik Informatika



(Desi Ramayanti, S.Kom, MT)
Ka. Prodi Teknik Informatika

ABSTRAK

Nama : Sandesta Prima Aksah
NIM : 41516010037
Pembimbing TA : Dr. Devi Fitriana
Judul : Tugas Akhir Komprehensif

Pada sebuah Konsep Klasifikasi dengan Support Vector Machine(SVM) adalah mencari hyperplane terbaik yang berfungsi sebagai pemisah dua kelas data. Ide sederhana dari SVM adalah memaksimalkan margin, yang merupakan jarak pemisah antara kelas data, disini saya akan membandingkan sebuah suporter distadion sepak bola dengan followers instagram sebuah klub tersebut. Sebuah klub sepak bola sangat bergantung pada sebuah suporter sehingga hubungan klub dan suporter harus terjalin dengan baik. Pendukung klub sepak bola sendiri cukup sering memberikan argumen terhadap sebuah klub sepak bola melalui media sosial Instagram. Oleh karena itu, saya mengusulkan penelitian untuk membangun sistem analisis sentimen terhadap opini performa klub sepak bola pada dokumen instagram. Penelitian ini menggunakan metode Support Vector Machine dan Naive bayes lalu mencocokkan data followers instagram dengan suporter yang datang pada sebuah pertandingan. Tahapan yang dilakukan dimulai dengan melakukan survey pada data followers, kemudian melakukan banding, karena tidak semua suporter menggunakan sosial media begitu pula sebaliknya, tidak semua followers di sosial media akan mendatangi stadion sepak bola.

Kata kunci:
SVM, Naive bayes, Followers, suporter bola

ABSTRACT

Name : Sandesta Prima Aksah
Student Number : 41516010037
Counsellor : Dr. Devi Fitriana
Title : Tugas Akhir Komprehensif

In a Classification Concept with a Support Vector Machine (SVM) it is looking for the best hyperplane that functions as a separator of two data classes. The simple idea of SVM is to maximize the margin, which is the separation distance between data classes, here I will compare a supporter in a football stadium with the Instagram followers of a club. A football club is very dependent on a supporter so that the relationship between the club and supporters must be good. Football club supporters themselves quite often give arguments against a football club through Instagram social media. Therefore, I propose a study to build a sentiment analysis system for football club performance opinions on Instagram documents. This study uses the Support Vector Machine and Naive Bayes methods and then matches the data of Instagram followers with supporters who come to a match. The steps taken started by surveying the followers' data, then making an appeal, because not all supporters use social media and vice versa, not all followers on social media will come to the football stadium.

Keywords:

SVM, Naive bayes, Followers, football supporters

KATA PENGANTAR

Puji syukur kita panjatkan kepada Tuhan Yang Maha Esa yang telah memberikan rahmat dan karunia-Nya, sehingga penulis dapat menyelesaikan laporan pelaksanaan yudisium rievew jurnal kompre.

Penulis menyadari bahwa tanpa bantuan dan bimbingan dari keluarga, teman serta dosen pembimbing. Laporan ini belum tentu dapat penulis selesaikan Oleh karena itu, penulis mengucapkan terima kasih kepada:

1. Ibu Devi Fitriana selaku pembimbing Tugas Akhir yang selalu memberikan arahan terhadap penulisan Tugas Akhir ini
2. Bapak Dr. Mujiono Sadikin, M.T.CISA, CGEIT, selaku Dekan Fakultas Ilmu Komputer UMB.
3. Bapak Diky Firdaus, S.Kom, MM selaku Koordinator Tugas Akhir Program Studi Teknik Informatika di Universitas Mercubuana.
4. Ibu Desi Ramayanti, S.Kom., M.T. selaku Kepala Program Studi Teknik Informatika di Universitas Mercu Buana
5. Ibu Eliyani, Dr.Ir.,selaku Dosen Pembimbing Akademik.
6. Seluruh Dosen Teknik Informatika Universitas Mercubuana Jakarta.
7. Orang tua yang selalu memberikan dukungan dan doa sehingga penulis dapat menyelesaikan Tugas Akhir beserta laporannya dengan lancar.
8. Elvira Oktaviana yang selalu menemani disaat mengerjakan Tugas Akhir.

Akhir kata, penulis berharap semoga tugas akhir ini bermanfaat bagi para pembaca dan semua pihak khususnya dalam bidang ilmu komputer. Penulis menyadari bahwa masih banyak kekurangan dari laporan ini, baik dari materi maupun teknik penyajiannya, mengingat kurang pengetahuan dan pengalaman. Oleh karena itu, kritik dan saran yang membangun sangat diharapkan.

Jakarta, 26 Agustus 2020

Sandesta Prima Aksah

I. TOPIK / BIDANG ILMU

Berisi topik / bidang ilmu yang akan dibahas, disesuaikan dengan topik / bidang ilmu yang ada pada Tugas Akhir, yaitu

- Kecerdasan Buatan, Data Mining, Machine Learning, Pengolahan Citra, dan topik sejenis lainnya
- Pemrograman Web / Mobile
- Jaringan Komputer dan atau Keamanan Jaringan

II. DAFTAR JURNAL (MINIMAL 20)

Bagian ini berisi **daftar judul artikel** yang akan di review. Dimana terdiri dari*

1. Minimal 5 Jurnal dari jurnal terakreditasi Nasional Sinta pada web <http://sinta.ristekbrin.go.id/>, bisa dicari di <http://garuda.ristekbrin.go.id/>
2. Minimal 5 Jurnal yang terindeks Scopus atau science direct dan jurnal bereputasi lainnya
3. Maximal 5 jurnal yang tidak termasuk dalam point 1,2

No	Judul Jurnal	Kategori (diisi dengan 1/2/3)*
1.	Optimized Sample Selection in SVM Classification by Combining with DMSP-OLS, Landsat NDVI and GlobeLand30 Products for Extracting Urban Built-Up Areas	2
2.	On-line estimation of the aerobic phase length for partial nitrification processes in SBR based on features extraction and SVM classification	3
3.	Image Analysis for MRI Based Brain Tumor Detection and Feature Extraction Using Biologically Inspired BWT and SVM	3
4.	Handwritten Character Recognition Using Multiclass SVM Classification with Hybrid Feature Extraction	3

5.	Comparative Study on KNN and SVM Based Weather Classification Models for Day Ahead Short Term Solar PV Power Forecasting	1
6.	Multiple Kernel-Based SVM Classification of Hyperspectral Images by Combining Spectral, Spatial, and Semantic Information	3
7.	Using PCA combined SVM in the classification of eutrophication in DEZ reservoir (Iran)	2
8.	CLASSIFICATION OF H&E STAINED ORAL CANCER IMAGES USING STATISTICAL AND HISTOGRAM FEATURES WITH SVM	1
9.	SVM-DS fusion based soft fault detection and diagnosis in solar water heaters	3
10.	Efficient technique to estimate age using PCA & multi SVM classification	2
11.	Classification of Multiple Chinese Liquors by Means of a QCM-based E-Nose and MDS-SVM Classifier	3
12.	Optimization Performance Comparison of Three Different Group Intelligence Algorithms on a SVM for Hyperspectral Imagery Classification	1
13.	A Novel MOGA-SVM Multinomial Classification for Organ Inflammation Detection	3
14.	SVM Classification of Brain images from MRI Scans using Morphological Transformation and GLCM Texture Features	2
15.	Feature Selection and Parameters Optimization of SVM Using Particle Swarm Optimization for Fault Classification in Power Distribution Systems	1
16.	Road Surface State Recognition Based on SVM Optimization and Image Segmentation Processing	3
17.	Automatic Detection of Hard Exudates in Color Retinal Images Using Dynamic Threshold and SVM Classification: Algorithm Development and Evaluation	1
18.	Diagnostic Method of Diabetes Based on Support Vector Machine and Tongue Images	3
19.	Author Identification using SVM and Naive Bayes Techniques	2

20.	Phishing Websites Classification using Hybrid SVM and KNN Approach	3
-----	--	---

III. TABEL REVIEW

No	1 (SATU)
Judul Artikel	Optimized Sample Selection in SVM Classification by Combining with DMSP-OLS, Landsat NDVI and GlobeLand30 Products for Extracting Urban Built-Up Areas[1]
Topik	Data mining
Data	<p>The DMSP-OLS nighttime light data with a 1-km spatial resolution were provided by the National Geophysical Data Center. Stable nighttime light images (Figure 1), The primary data source was Landsat data from the benchmark years of 2000 and 2010, and the supplemental data included China's Environmental Disaster Mitigation satellite images and Beijing-1 data in partial areas. Compared with DMSP-OLS data with 1000 m resolution, GlobeLand30 was the latest product with 30 m resolution at a much higher level, which developed based on a pixel classification-object abstraction-knowledge check (POK) method [39]. Ten types of land cover were included: forests, grassland, shrub land, wetlands, bare land, tundra, cultivated land, water bodies, permanent snow/ice, and artificial surfaces (Figure 2). The data were divided by the attribute values of these land cover types to extract artificial surfaces as an independent layer. Artificial surfaces were represented by land cover types covered with asphalt, concrete, gravel, bricks, tiles, and other building materials resulting from human activity, and they included residential areas, transportation, telecommunication, industry, and mining infrastructure. The product information officially verified by GlobeLand30 was reported in the top international scientific journal "Nature" in Volume 514 in</p>

	<p>2014. More authoritative information can also be found on the official website of GlobeLand30 [40], which officially reports that the overall accuracy (OA) of an average GlobeLand30 classification is approximately 80.33% globally, the Kappa indicator of the classification is 0.75, and the user accuracy [1] of the artificial surface class for the GlobeLand30 product is approximately 86.70% [39].</p> <p>In addition, reference data for urban built-up areas are mainly sourced from the China Urban Construction Statistical Yearbook of 2011 [41]. Information on boundaries of urban administrative divisions and urban spatial structures is gathered from the 1:4 million scale vector datasets in the National Fundamental Geographic Information System [1]</p>
<p>Metode / Algoritma</p>	<p>SVM Klasifikasi</p>
<p>Abstrak</p>	<p>The accuracy of training samples used for data classification methods, such as support vector machines (SVMs), has had a considerable positive impact on the results of urban area extractions. To improve the accuracy of urban built-up area extractions, this paper presents a sample-optimized approach for classifying urban area data using a combination of the Defense Meteorological Satellite Program-Operational Linescan System (DMSP-OLS) for nighttime light data, Landsat images, and GlobeLand30, which is a 30-m global land cover data product. The proposed approach consists of three main components: (1) initial sample generation and data classification into built-up and non-urban built-up areas based on the maximum and minimum intervals of digital numbers from the DMSP-OLS data, respectively; (2) refined sample selection and optimization by the probability threshold of each pixel based on vegetation-cover, using the Landsat-derived normalized differential vegetation index (NDVI) and artificial surfaces extracted from the GlobeLand30 product as the constraints; (3) iterative classification and urban built-up area data extraction using the relationship between these three aspects of data collection together with the training sets. Experiments</p>

	<p>were conducted for several cities in western China using this proposed approach for the extraction of built-up areas, which were classified using urban construction statistical yearbooks and Landsat images and were compared with data obtained from traditional data collection methods, such as the threshold dichotomy method and the improved neighborhood focal statistics method. An analysis of the empirical results indicated that (1) the sample training process was improved using the proposed method, and the overall accuracy (OA) increased from 89% to 96% for both the optimized and non-optimized sample selection; (2) the proposed method had a relative error of less than 10%, as calculated by an accuracy assessment; (3) the overall and individual class accuracy were higher for artificial surfaces in GlobeLand30; and (4) the average OA obviously improved and the Kappa coefficient in the case of Chengdu increased from 0.54 to 0.80. Therefore, the experimental results demonstrated that our proposed approach is a reliable solution for extracting urban built-up areas with a high degree of accuracy.[1]</p>
<p>Hasil</p>	<p>This study focused on four cities with relatively low levels of urban development in western China: Chengdu, Kunming, Xining, and Yinchuan. Because the spatial resolution of Landsat images is much finer than that of the nighttime stable light data, evaluating the results using Landsat data is a feasible and acceptable approach [57,58]. To quantify the performance of the threshold dichotomy method, the improved NFS method, and our proposed method, we performed accuracy assessments using Landsat images as the reference data and considered these methods as different schemes of urban area data extraction. The respective results should be compared with those extracted from Landsat images according to visual and quantitative comparisons of pattern spots.[1]</p>
<p>Kesimpulan</p>	<p>This paper presented a sample-optimized approach for SVM classification based on a combination of DMSP-OLS nighttime light layer data, artificial surface data from the GlobeLand30 product,</p>

	<p>and vegetated regions from Landsat images, which were used as criteria for the selection of training samples to identify optimized samples that represent built-up areas and non-built-up areas according to an iterative updating procedure. This method can successfully remove the above land-cover categories such as vegetation and bare land from the built-up areas, and obtain the areas which have been developed and constructed with basic municipal utilities and public facilities in the urban administration region. Our proposed approach is novel in the nighttime light data application field and different from other SVM-based extraction methods using DMSP-OLS data in the cited literature.</p> <p>In terms of the overall distribution of extracted built-up urban patches, the samples identified by the proposed method were finer than those of the threshold dichotomy method and the improved NFS method. [1]</p>
<p>Penulis</p>	<ol style="list-style-type: none"> 1. Xiaolong Ma 2. Xiaohua Tong 3. Sicong Liu 4. Xin Luo 5. Huan Xie 6. Chengming Li
<p>Nama jurnal, Volume, Nomor, Tahun</p>	<p>Remote Sens. 2017, 9, 236</p>
<p>Ulasan artikel</p>	<p>Keakuratan sampel pelatihan digunakan untuk metode klasifikasi data, seperti dukungan mesin vektor, telah memiliki dampak positif yang cukup besar pada hasil wilayah perkotaan ekstraksi. Untuk meningkatkan akurasi ekstraksi daerah perkotaan, makalah ini menyajikan pendekatan sampel dioptimalkan untuk mengklasifikasikan data wilayah perkotaan menggunakan kombinasi PertahananProgram Satelit Meteorologi- Sistem Lines can Operasional untuk data cahaya malam hari, Gambar Landsat, dan GlobeLand 30, yang merupakan produk data tutupan lahan global 30-m. Eksperimen dilakukan untuk beberapa kota di Cina barat menggunakan pendekatan yang diusulkan ini untuk ekstraksi daerah terbangun, yang diklasifikasikan menggunakan buku tahunan statistik konstruksi perkotaan dan Landsat gambar dan dibandingkan dengan data yang diperoleh dari metode pengumpulan data tradisional, seperti metode dikotomi ambang batas dan metode statistik fokus lingkungan yang ditingkatkan. Karena itu, hasil eksperimen menunjukkan bahwa pendekatan yang kami usulkan adalah solusi anda untuk mengekstraksi daerah perkotaandengan tingkat akurasi yang tinggi. Hasil masing-masing harus dibandingkan dengan yang diekstraksi dari Gambar landsat sesuai dengan perbandingan visual dan kuantitatif bintik-bintik pola. Makalah ini menyajikan pendekatan yang</p>

	<p>dioptimalkan sampel untuk klasifikasi SVM berdasarkan kombinasi data lapisan cahaya DMSP-OLS malam hari, data permukaan buatan dari produk GlobeLand 30, dan daerah yang bervegetasi dari citra Landsat, yang digunakan sebagai kriteria untuk pemilihan pelatihan sampel untuk mengidentifikasi sampel yang dioptimalkan yang mewakili area built-up dan area non-built-up sesuai ke prosedur pembaruan berulang. Metode ini dapat berhasil menghilangkan tutupan lahan di ataskategori seperti vegetasi dan lahan kosong dari area terbangun, dan dapatkan area yang telah dikembangkan dan dibangun dengan utilitas kota dasar dan fasilitas publik di perkotaan wilayah administrasi.</p> <p>Namun, pendekatan ini mengoptimalkan proses pemilihan sampel tanpa bergantung pada data statistik dan meningkatkan efisiensi dan ketepatan klasifikasi SVM. Selain itu, metode yang diusulkan sebagian besar menghindari kelemahan yang terkait dengan menggunakan sumber data tunggal.</p> <p>Pendekatan yang diusulkan adalah tepat waktu dan metode hemat biaya untuk memantau pola spasial dan dinamika temporal wilayah perkotaan juga sebagai kondisi geografis pada skala nasional.</p>
--	--

No	2 (DUA)
Judul Artikel	On-line estimation of the aerobic phase length for partial nitrification processes in SBR based on features extraction and SVM classification[2]
Topik	Data mining
Data	<p>all the training set is plotted in the features plane, where the two classes are represented in well defined, but not linearly separable areas.</p> <p>iii) Testing Data: The remaining 20% of the database, used to test the previously trained SVM classifier and evaluate its classification accuracy [35].</p> <p>iv) SVM Training: An SVM with Gaussian kernel was chosen, since it has a better classification accuracy than other kernel functions [39]. The Matlab function fitcsvm was used to train this SVM classifier according to the procedure shown in [38], where the BoxConstraint and KernelScale hyper-parameters are tuned to maximize the classification based on the classification error retained from cross-validation [39].</p> <p>V) SVM Testing: In this step the classifier performance was determined using the testing data.[2]</p>
Metode / Algoritma	Feature extraction, Partial nitrification, SBR, SVM

<p>Abstrak</p>	<p>We present a strategy for the on-line estimation of the aerobic reaction phase length for a partial nitrification process with pH and dissolved oxygen closed-loop control. To overcome existing drawbacks associated to partial nitrification (e.g., non-linearities and time-variant behaviors), our strategy is based on feature extraction over manipulated variables to identify interesting patterns associated to the end-point of nitrification. We use a support vector machine (SVM) classifier as a decision tool to determine the end-point of the aerobic phase. A database of lab-scale sequencing batch reactor (SBR) cycles selected from ten months of operation was used to train and test the proposed decision-making strategy. Results for all 533 SBR cycles showed 100% correct classifications. Most aerobic phase lengths in the analyzed database had a reduction time around 20 min, although time reductions greater than 60 min were also achieved.</p>
<p>Hasil</p>	<p>The BoxConstraint and KernelScale hyper-parameters of the SVM classifier with Gaussian kernel were tuned in the training phase, and their values are shown in Table 3. Using these hyper-parameters, an optimum decision boundary of the SVM classifier was found to discriminate between the two classes of the aerobic phase length estimation problem. In Fig. 12, the decision boundary (in green) and the two classes can be visualized. The first step to evaluate the classification performance is through the application of the classifier over the training database, the confusion matrix, and the previously defined performance measures. The results of these performance hyper-parameters are shown in Table 4. To prevent the overfitting of the classifier[2]</p>
<p>Kesimpulan</p>	<p>A novel strategy of aerobic phase length estimation based on feature extraction and SVM classifiers over a BNR process was presented. Both extracted features, Pulses Rate and Power of the signal %AVO, showed to be fundamental to obtain representative patterns of the aerobic phase end-point. This despite changes in operating condition of the reactor and non-linear/time-variant characteristics of the nitrification processes. From a point of view of binary classification, the selected features always allowed to have separability between the classes defined in this work. According to the classification results, a 100% of accuracy were obtained for both the training database and the testing database, validating the selected features and SVM training performance. The use of the proposed strategy, in comparison with previous methodologies,</p>

	allows for a total reduction in aerobic phase lengths of approximately 7.52% (corresponding to 9.54 days). Most aerobic phase lengths in the analyzed database had a reduction time around 20 min, but time reductions greater than 60 min were also achieved.[2]
Penulis	<ol style="list-style-type: none"> 1. Francisco Jaramilloa 2. Marcos Orcharda 3. Carlos Muñozb 4. Christian Antileoc 5. Doris Sáeza 6. Pablo Espinozaa
Nama jurnal, Volume, Nomor, Tahun	Chemical Engineering Journal 331(2018) 114-123
Ulasan artikel	<p>Kami menyajikan strategi untuk estimasi on-line dari panjang fase reaksi aerobik untuk nitrifikasi parsial proses dengan pH dan kontrol loop tertutup oksigen terlarut. Untuk mengatasi kelemahan yang ada terkait dengan parsial nitrifikasi, strategi kami didasarkan pada ekstraksi fitur lebih variabel yang dimanipulasi untuk mengidentifikasi pola menarik yang terkait dengan titik akhir nitrifikasi. Kami menggunakan support classifier machine vector sebagai alat keputusan untuk menentukan titik akhir fase aerobik. Sebuah database siklus reaktor batch sekuensing skala dipilih dari sepuluh bulan operasi digunakan untuk melatih dan menguji strategi pengambilan keputusan yang diusulkan. Kami menggunakan pengklasifikasi SVM untuk menghasilkan aturan keputusan di antara keduanya kelas. Ini dicapai dengan mencari hyper-plane terbaik yang memaksimalkan margin ke fitur terdekat. Ekstraksi fitur yang benar/seleksi sangat meningkatkan kinerja classifier, menjadi karena memungkinkan untuk memiliki pemisahan yang lebih besar antara kelas-kelas. Di dalam akal, kami memiliki keuntungan menggabungkan lebih banyak informasi daripada strategi lain yang mencari pola secara langsung disinyal sensor, yang kendala saat ini untuk parameter operasi Strategi baru estimasi panjang fase aerobik berdasarkan fitur ekstraksi dan pengklasifikasi SVM atas proses BNR disajikan. Keduafitur yang diekstraksi, Pulsa Rate dan Power dari sinyal% AVO, menunjukkan menjadi dasar untuk mendapatkan pola yang representatif dari fase aerobik titik akhir. Menurut hasil klasifikasi, akurasi 100% diperoleh untuk database pelatihan dan database pengujian, memvalidasi fitur yang dipilih dan kinerja pelatihan SVM. Menggunakan dari strategi yang diusulkan, dibandingkan dengan metodologi sebelumnya, memungkinkan untuk pengurangan total panjang fase aerobik sekitar 7,52%. Sebagian besar fase aerobik dalam database yang dianalisis memiliki waktu pengurangan sekitar 20 menit, tetapi waktu kembali pengurangan yang lebih besar dari 60 mnt juga dicapai. Parameter-parameter Box Constraint dan Kernel Scale dari SVM classifier dengan kernel Gaussian disetel pada fase pelatihan, dan nilainya ditunjukkan pada Tabel 3. Dengan menggunakan parameter-hiper ini, sebuah batas</p>

	keputusan optimal dari classifier SVM ditemukan mengkriminalkan antara dua kelas dari estimasi panjang fase aerobik masalah.
--	--

No	3 (TIGA)
Judul Artikel	Image Analysis for MRI Based Brain Tumor Detection and Feature Extraction Using Biologically Inspired BWT and SVM[3]
Topik	Data mining
Data	<p>The first dataset is the Digital Imaging and Communications in Medicine (DICOM) dataset [39]. For the purpose of the analysis, we considered 22 images from the DICOM dataset, all of which included are tumor-infected brain tissues. However, this dataset did not have any ground truth images. The second dataset is the Brain Web dataset [40], which consists of full three-dimensional simulated brain MR data obtained using three sequences of modalities, namely, T1-weighted MRI, T2-weighted MRI, and proton density-weighted MRI. This dataset included a variety of slice thicknesses, noise levels, and levels of intensity nonuniformity. The images used for our analysis are mostly included T2-weighted modality with 1 mm slice thickness, 3% noise, and 20% intensity nonuniformity. In this dataset, 13 out of 44 images included are tumor-infected brain tissues.</p> <p>The last dataset collected from expert radiologists consisted of 135 images of 15 patients with all modalities. This dataset had ground truth images that helped to compare the results of our method with the manual analysis of radiologists.</p> <p>This section presents the results of our proposed image segmentation technique, which are obtained by using real brain MR images. The proposed algorithm was carried out using Matlab 7.12.0 (R2011a), which runs on the Windows 8 operating system and has an Intel core i3 processor and a</p>

	4 GB RAM. The sample experimental results obtained from the proposed technique that are depicted in Figures 4, 5, and 6 show the original image along with enhanced image, skullstripped image, wavelet decompose image, cluster (intense) segmented image, dice overlap image, and the tumor region with extracted area mark.[3]
Metode / Algoritma	SVM Klasifikasi
Abstrak	The segmentation, detection, and extraction of infected tumor area from magnetic resonance (MR) images are a primary concern but a tedious and time taking task performed by radiologists or clinical experts, and their accuracy depends on their experience only. So, the use of computer aided technology becomes very necessary to overcome these limitations. In this study, to improve the performance and reduce the complexity involves in the medical image segmentation process, we have investigated Berkeley wavelet transformation (BWT) based brain tumor segmentation. Furthermore, to improve the accuracy and quality rate of the support vector machine (SVM) based classifier, relevant features are extracted from each segmented tissue. The experimental results of proposed technique have been evaluated and validated for performance and quality analysis on magnetic resonance brain images, based on accuracy, sensitivity, specificity, and dice similarity index coefficient. The experimental results achieved 96.51% accuracy, 94.2% specificity, and 97.72% sensitivity, demonstrating the effectiveness of the proposed technique for identifying normal and abnormal tissues from brain MR images. The experimental results also obtained an average of 0.82 dice similarity index coefficient, which indicates better overlap between the automated (machines) extracted tumor region with manually extracted tumor region by radiologists. The simulation results prove the significance in terms of quality parameters and accuracy in comparison to stateof-the-art techniques. [3]
Hasil	To validate the performance of our algorithm, we used two benchmark datasets and one dataset collected from expert radiologists, which included sample images of 15 patients [3]
Kesimpulan	In this study, using MR images of the brain, we segmented brain tissues into normal tissues such as white matter, gray matter, cerebrospinal fluid (background), and tumor-infected

	<p>tissues. Fifteen patients infected with a glial tumor, in benign and malignant stages, assisted in this study. We used preprocessing to improve the signal-to-noise ratio and to eliminate the effect of unwanted noise. We used a skull stripping algorithm based on threshold technique to improve the skull stripping performance. Furthermore, we used Berkeley wavelet transform to segment the images and support vector machine to classify the tumor stage by analyzing feature vectors and area of the tumor. In this study, we investigated texture based and histogram based features with a commonly recognized classifier for the classification of brain tumor from MR brain images. From the experimental results performed on the different images, it is clear that the analysis for the brain tumor detection is fast and accurate when compared with the manual detection performed by radiologists or clinical experts. The various performance factors also indicate that the proposed algorithm provides better result by improving certain parameters such as mean, MSE, PSNR, accuracy, sensitivity, specificity, and dice coefficient. Our experimental results show that the proposed approach can aid in the accurate and timely detection of brain tumor along with the identification of its exact location. Thus, the proposed approach is significant for brain tumor detection from MR images. The experimental results achieved 96.51% accuracy demonstrating the effectiveness of the proposed technique for identifying normal and abnormal tissues from MR images. Our results lead to the conclusion that the proposed method is suitable for integrating clinical decision support systems for primary screening and diagnosis by the radiologists or clinical experts. In the future work, to improve the accuracy of the classification of the present work, we are planning to investigate the selective scheme of the classifier by combining more than one classifier and feature selection techniques.[3]</p>
Penulis	<ol style="list-style-type: none"> 1. Nilesh Bhaskarrao Bahadure 2. Arun Kumar Ray 3. Har Pal Thethi
Nama jurnal, Volume, Nomor, Tahun	<p>International Journal of Biomedical Imaging Volume 2017, Article ID 9749108, 12 pages</p>
Ulasan artikel	<p>Dalam penelitian ini, menggunakan gambar MR otak, kami melakukan segmentasi jaringan otak menjadi jaringan normal seperti materi putih, abu-abu materi, cairan serebrospinal, dan terinfeksi tumor tisu. Lima belas pasien terinfeksi dengan tumor glial, dalam jinak dan tahap ganas, dibantu dalam penelitian ini. Kami menggunakan prepro berhenti untuk meningkatkan rasio signal-to-noise dan untuk menghilangkan efek kebisingan yang tidak diinginkan. Kami menggunakan pengupasan tengkorak algoritma berdasarkan teknik ambang batas untuk meningkatkan kinerja pengupasan tengkorak. Dalam penelitian ini, kami menyelidiki fitur berbasis tekstur dan histogram dengan umum</p>

	<p>classifier yang diakui untuk klasifikasi tumor otak dari Gambar otak MR. Dari hasil eksperimen yang dilakukan pada gambar yang berbeda, jelas bahwa analisis untuk otak deteksi tumor cepat dan akurat bila dibandingkan dengan deteksi manual dilakukan oleh ahli radiologi atau klinis ahli Berbagai faktor kinerja juga menunjukkan itu algoritma yang diusulkan memberikan hasil yang lebih baik dengan meningkatkan parameter tertentu seperti mean, MSE, PSNR, akurasi, sensitivitas, spesifisitas, dan koefisien dadu. Eksperimental kami. Segmentasi, deteksi, dan ekstraksi area tumor yang terinfeksi dari citra magnetic resonance menjadi perhatian utama tetapi tugas yang membosankan dan memakan waktu dilakukan oleh ahli radiologi atau ahli klinis, dan keakuratannya tergantung pada pengalaman merekahanya. Dalam penelitian ini, untuk meningkatkan kinerja dan mengurangi kompleksitas yang terlibat dalam proses segmentasi citra medis, kami telah menyelidiki wavelet Berkeley segmentasi tumor otak berbasis transformasi . Selanjutnya, untuk meningkatkan tingkat akurasi dan kualitas dukunganmesin berbasis vektor , fitur yang relevan diekstraksi dari setiap jaringan yang tersegmentasi. Hasil percobaan teknik yang diusulkan telah dievaluasi dan divalidasi untuk analisis kinerja dan kualitas pada gambar otak resonansi magnetik, berdasarkan akurasi, sensitivitas, spesifisitas, dan koefisien indeks kesamaan dadu. Hasil percobaan mencapai akurasi 96,51%,94,2% spesifisitas, dan sensitivitas 97,72%, menunjukkan efektivitas teknik yang diusulkan untuk mengidentifikasi normal dan jaringan abnormal dari gambar MR otak. Hasil percobaan juga memperoleh rata-rata koefisien kemiripan indeks dadu 0,82, yang menunjukkan tumpang tindih yang lebih baik antara wilayah tumor yang diekstraksi otomatis dengan wilayah tumor yang diekstraksi secara manual oleh ahli radiologi.</p>
--	---

No	4 (EMPAT)
Judul Artikel	Handwritten Character Recognition Using Multiclass SVM Classification with Hybrid Feature Extraction[4]
Topik	Data mining
Data	The second most important component in successfully achieving handwritten character recognition is the pattern classification stage. This stage will assign an unknown character sample to one of possible classes by utilizing the information of feature extraction stage. Different types of classifiers can be built based on the nature and type of data samples and the extracted features. Classifiers used for character recognition problem include k-nearest neighbor classifier, hidden Markov model (HMM),

	<p>support vector machine (SVM), and artificial neural network (ANN) etc. Jain et al. [10] give a review of statistical pattern recognition techniques. In [11], Pal and Singh train neural network to recognize uppercase handwritten characters based on Fourier descriptors of character boundaries as features. In [12], recognition of handwritten alphabets using neural network and zoning based diagonal features is addressed. In [13], Shubhangi and Hiremath recognize English handwritten characters and digits by extracting structural micro features for SVM classifier. Nasien et al. [14] also use SVM classifier to recognize handwritten alphabets by employing Freeman Chain codes as the features. In [15], Train et al. recognize accented handwritten French characters based on a combination of structural and moment features for SVM classifier. In [16], Liu and Nakagawa give a review of learning methods for nearest neighbor classifiers. [17] and [18] build HMM to recognize, respectively, offline handwritten Chinese characters and online English characters.[4]</p>
Metode / Algoritma	<p>character recognition, feature extraction, correlation function, SVM</p>
Abstrak	<p>In this paper, we describe hybrid feature extraction for offline handwritten character recognition. The proposed technique is a hybrid of structural, statistical and correlation features. In the first step, the proposed technique identifies the type and location of some elementary strokes in the character. The strokes to be looked for comprise horizontal, vertical, positive slant and negative slant lines—as we observe that the structure of any character can be approximated with the help of a combination of simple straight line strokes. The strokes are identified by correlating different segments of the character with the chosen elementary shapes. These normalized correlation values at different segments of the character give correlation features. For making feature extraction more robust, we add in the second step certain structural/statistical features to the correlation features. The added structural/statistical features are based on projections, profiles, invariant moments, endpoints and junction points. This enhanced, powerful combination of features results in a 157-variable feature vector for each</p>

	<p>character, which we find adequate enough to uniquely represent and identify each character. Prior, handwritten character recognition problem has not been addressed the way our proposed hybrid feature extraction technique deals with it. The extracted feature vector is used during the training phase for building a support vector machine (SVM) classifier. The trained SVM classifier is subsequently used during the testing phase for classifying unknown characters. Experiments were performed on handwritten digit characters and uppercase alphabets taken from different writers, without any constraint on writing style. The obtained results were compared with some related existing approaches. Owing to the proposed technique, the results obtained show higher efficiency regarding classifier accuracy, memory size and training time as compared to these other existing approaches. [4]</p>
<p>Hasil</p>	<p>We tested this system on handwritten characters taken from 30 different writers, who were allowed to write in their natural style. The whole system was implemented in MATLAB. After the pre-processing stage, we extracted a total of 6092 characters for handwritten uppercase alphabets and 2279 handwritten digits from the scanned documents. Data samples were divided into two parts: a two-third of data samples was reserved for training purpose while one-third of data samples was reserved for testing purpose. Accordingly, alphabets training data consisted of 4067 characters while alphabets testing data comprised 2025 characters. Similarly, digits training data consisted of 1857 numerals while digits testing data consisted of 922 numerals. Feature vectors of dimension 157 were extracted for the training data of handwritten characters and numerals. One SVM model was trained on 157×4067 feature matrix of alphabets and another was trained on 157×1857 feature matrix of handwritten digits. SVM parameters on training data were fine-tuned using 3-fold cross-validation. Once the SVM models of handwritten alphabets and digits were trained, we checked performance of the recognition system on reserved testing data sets. Out of the testing data, only 32/922 digits and 80/2025 alphabets were misclassified. This gives 96.5% recognition accuracy</p>

	<p>on chosen digits data and 96% recognition accuracy on chosen alphabets data. The system showed 100% accuracy on training data of both alphabets and numerals. We compared performance of our proposed technique with [7] and [21] on the same handwritten data samples. The SVM classifiers were trained and tested on the feature extraction techniques of [7] and [21]. The results are shown in Table 1. Table 1 shows that our proposed technique is more accurate and more efficient compared to the other two approaches. Its training time and memory size of found classifier is much less compared to the other two approaches. The system has also higher recognition rate as compared to other two approaches. We further examined the performance of our system on data samples of a new writer not originally among the 30 writers on whom the system was trained and tested. Figure 8 and figure 9 show performance of the system on this new writer. We observed during the feature extraction stage that the thinning process sometimes eliminates important character strokes which cause some characters to get misclassified. The system performance can therefore be further improved by refining the thinning stage. [4]</p>
Kesimpulan	<p>A complete offline handwritten character recognition system based on a hybrid feature extraction technique has been presented. The system comprised three main stages, i.e. pre-processing, feature extraction technique, and SVM based training/classification. The proposed hybrid feature extraction technique, as experiments revealed, proved to capture local and global variations in handwritten character styles. The extracted feature vector was a combination of correlation function based features and some statistical/structural features. The correlation features identified the straight line strokes in characters which were then equipped with some statistical/structural features to make the feature vector more robust. Owing to the proposed feature extraction technique, the trained support vector machine classifier has shown higher efficiency with respect to speed, memory, and classification accuracy as compared to other related approaches dealing the handwritten character recognition problem. [4]</p>
Penulis	<ol style="list-style-type: none"> 1. Muhammad Naeem Ayyaz 2. Imran Javed 3. Waqar Mahmood
Nama jurnal, Volume, Nomor, Tahun	Pak. J. Engg. & Appl. Sci. Vol. 10, Jan., 2012 (p. 57-67)

Ulasan artikel

Dalam tulisan ini, kami menjelaskan ekstraksi fitur hibrida untuk pengenalan karakter tulisan tangan offline. Teknik yang diusulkan adalah gabungan fitur struktural, statistik dan korelasi. Pada langkah pertama, teknik yang diusulkan mengidentifikasi jenis dan lokasi beberapa pukulan elementer dalam karakter. Garis yang harus dicari terdiri dari garis miring horizontal, vertikal, positif dan negatif seperti kami mengamati bahwa struktur karakter apa pun dapat didekati dengan bantuan kombinasi garis lurus sederhana. Stroke diidentifikasi dengan mengkorelasikan segmen yang berbeda dari karakter dengan bentuk-bentuk dasar yang dipilih. Nilai korelasi yang dinormalisasi ini berbeda segmen karakter memberikan fitur korelasi. Untuk membuat ekstraksi fitur lebih kuat, kami tambahkan pada langkah kedua fitur struktural / statistik tertentu ke fitur korelasi. Seluruh sistem itu diimplementasikan dalam MATLAB. Setelah pra-pemrosesan panggung, kami mengekstraksi total 6092 karakter untuk huruf besar tulisan tangan dan 2279 digit tulisan tangan dari dokumen yang dipindai. Data sampel dibagi menjadi dua bagian: dua pertiga darisampel data dicadangkan untuk tujuan pelatihan sementara sepertiga dari sampel data dicadangkan untuk pengujian tujuan. Dengan demikian, data pelatihan huruf terdiri dari 4067 karakter saat pengujian huruf data terdiri dari 2025 karakter. Demikian pula digit data pelatihan terdiri dari 1857 angka sementara angka data pengujian terdiri dari 922 angka. Fiturvektor dimensi 157 diekstraksi untuk data pelatihan karakter dan angka tulisan tangan. Satu model SVM dilatih pada fitur 157 4067 matriks huruf dan lainnya dilatih 157 1857 fitur matriks digit tulisan tangan. Waktu pelatihan dan ingatannya ukuran classifier yang ditemukan jauh lebih sedikit dibandingkan dengandua pendekatan lainnya. Sistemnya juga lebih tinggi tingkat pengakuan dibandingkan dengan dua lainnya pendekatan. Kami lebih lanjut memeriksa kinerja sistem kami pada sampel data dari penulis baru tidak awalnya di antara 30 penulis siapa sistem dilatih dan diuji. Gambar 8 dan gambar 9 menunjukkan kinerja sistem pada penulis baru ini. Kita diamati selama tahap ekstraksi fitur yang proses penipisan terkadang menghilangkan penting sapuan karakter yang menyebabkan beberapa karakter mendapatkan salah klasifikasi. Karena itu kinerja sistem dapat ditingkatkan lebih lanjut dengan menyempurnakan tahap penipisan. Kami mengusulkan ekstraksi fitur hybrid teknik dalam hubungannya dengan classifier SVM miliki menunjukkan kinerja yang baik pada digit tulisan tangan dan huruf besar.

No	5 (LIMA)
Judul Artikel	Comparative Study on KNN and SVM Based Weather Classification Models for Day Ahead Short Term Solar PV Power Forecasting[5]
Topik	Data Mining
Data	<p>Data classification procedures sort data into different distinct types and identify to which category new observational data belongs. Typically, several distinct and non-overlapping “classes” are defined in line with the common characteristics of sub-populations of the total data set, and then marked with labels to describe the particular feature of the sample data, such as the ‘spam’ or ‘not-spam’ label for a given email. Classification is considered as an instance of supervised learning in the machine learning research field [47]. With a training set of appropriately classified data samples, the distinction of data with different labels and the common features of data sharing the same labels can be learned by a classifier based on machine learning techniques. The classes of new observation data can then be recognized through the acknowledged classifier.</p> <p>The data classification problem involves three major factors: as the data, the classifier, and the classes. A classifier acquires data from the database and extracts its features, and then sorts it into a well-matched class. Data is the key factor affecting the accuracy of classification. Labels separate the data into different categories such that data with the same label are most similar and data with different labels are distinguishable by some defining characteristics. Theoretically, the original data contain all the information needed for recognizing the label. However, it is usually inefficient to directly use the original data as input into the classification model. On one hand, not all of the information is related to the labels: some characteristics may be useless for the classification and others may be redundant. On the other hand, the larger the dimension of the input vector, the more difficult it is for the classifier to learn the classification structure. Thus, a feature extraction process is essential for improving the</p>

	<p>effectiveness of a classification model by analyzing, generalizing, and compressing the original data. Extracted features need to characterize the original data and their corresponding labels. Upon the satisfaction of the above conditions, some machine learning theories can be applied to understand and learn the correspondence rules between features and labels. [5]</p>
Metode / Algoritma	solar PV power forecasting; weather classification; sample scale; SVM; KNN
Abstrak	<p>Accurate solar photovoltaic (PV) power forecasting is an essential tool for mitigating the negative effects caused by the uncertainty of PV output power in systems with high penetration levels of solar PV generation. Weather classification based modeling is an effective way to increase the accuracy of day-ahead short-term (DAST) solar PV power forecasting because PV output power is strongly dependent on the specific weather conditions in a given time period. However, the accuracy of daily weather classification relies on both the applied classifiers and the training data. This paper aims to reveal how these two factors impact the classification performance and to delineate the relation between classification accuracy and sample dataset scale. Two commonly used classification methods, K-nearest neighbors (KNN) and support vector machines (SVM) are applied to classify the daily local weather types for DAST solar PV power forecasting using the operation data from a grid-connected PV plant in Hohhot, Inner Mongolia, China. We assessed the performance of SVM and KNN approaches, and then investigated the influences of sample scale, the number of categories, and the data distribution in different categories on the daily weather classification results. The simulation results illustrate that SVM performs well with small sample scale, while KNN is more sensitive to the length of the training dataset and can achieve higher accuracy than SVM with sufficient samples.[5]</p>
Hasil	In this section, a comprehensive comparison between SVM and KNN in different situations is

	<p>conducted to achieve a basic understanding of their classification performance. The factors influencing classification accuracy for the KNN method considered in this paper are: the quantity of training data and the value of parameter K. For the SVM method, we only consider the sample scale.</p> <p>Figures 10–13 show the global performance of the SVM and KNN methods for all categories.</p> <p>In Figure 10, the OA of KNN varies with the value of parameter K and the quantity of training data.</p> <p>The accuracy of KNN is less sensitive to the quantity of training data when parameter K has a small value. However, with an increase in K, the value of OA shows significant changes with the training data quantity: a lower accuracy with small sample scales and a higher accuracy with large sample scale. In Figure 11, the OA of SVM is added in Figure 10, shown as the white plane. The performance of SVM is more stable than KNN as its accuracy plane is flat and is also higher than for the KNN method in most situations.[5]</p>
Kesimpulan	<p>In order to figure out which classifiers are more suitable for the weather classification models of DAST solar PV power forecasting under various circumstances, we investigate, compare and evaluate the influences of different machine learning classification methods and data statuses on classification accuracy in this paper. The simulation results based on two common used classification methods (i.e., KNN and SVM) illustrate that SVM achieved higher classification accuracy and more robustness performance than KNN under small sample data scales, while KNN showed the potential and finally exceeds in accuracy with the increase of training sample scales. This trend became more evident in the case of balanced data distribution than unbalanced data. For the KNN method, the number of nearest neighbors matters as well besides the sample scale, of which the optimal number is proportional to the quantity of the smallest category.</p> <p>The conclusions verified the merits of SVM that usually an accurate separation could be approached only using a comparative small amount of data by taking advantage of hyperplanes to separate data points in a high dimensional space through the characteristic mapping realized by appropriate kernel functions. At the same time, it also indicated that the influence of the amount and scale of the training dataset is much more significant to KNN than to SVM, which are also in accordance with the basic principle of</p>

	<p>KNN that the label of certain data point is determined by the majority of its neighboring points. Therefore, SVM is prioritized for weather status pattern classification of DAST solar PV power forecasting because of its advantage in dealing with small sample scales for those newly built PV plants lacking in historical data. As more data is available, the KNN classifier could become more accurate and needs to be taken into consideration. The feasibility and comparison research on the application of other machine learning classification methods for DAST solar PV power forecasting weather classification models, such as K-means, Adaptive Boosting and Random Forest, will be the future works subsequently[5]</p>
<p>Penulis</p>	<ol style="list-style-type: none"> 1. Fei Wang 2. ID Zhao Zhen 3. Bo Wang 4. Zengqiang Mi
<p>Nama jurnal, Volume, Nomor, Tahun</p>	<p>Appl. Sci. 2018, 8, 28</p>
<p>Ulasan artikel</p>	<p>Peramalan daya solar photovoltaic yang akurat adalah alat yang penting untuk mengurangi efek negatif yang disebabkan oleh ketidakpastian daya output PV dalam sistem dengan penetrasi tingkat tinggi generasi PV surya. Pemodelan berbasis klasifikasi cuaca adalah cara yang efektif untuk meningkatkan akurasi peramalan jangka pendek tenaga surya jangka pendek karena daya output PV sangat tergantung pada kondisi cuaca tertentu dalam periode waktu tertentu. Namun ketepatannya klasifikasi cuaca harian bergantung pada klasifikasi yang diterapkan dan data pelatihan. Kertas ini bertujuan untuk mengungkapkan bagaimana kedua faktor ini mempengaruhi kinerja klasifikasi dan untuk menggambarkan hubungan antara akurasi klasifikasi dan skala dataset sampel. Pada bagian ini, perbandingan komprehensif antara SVM dan KNN dalam situasi yang berbeda adalah dilakukan untuk mencapai pemahaman dasar tentang kinerja klasifikasi mereka. Faktor-faktor yang memengaruhi akurasi klasifikasi untuk metode KNN dipertimbangkan dalam makalah ini adalah: jumlah data pelatihan dan nilai parameter K. Untuk metode SVM, kami hanya mempertimbangkan skala sampel. Angka 10- 13 menunjukkan kinerja global metode SVM dan KNN untuk semua kategori. Dalam Gambar 10, OA KNN bervariasi dengan nilai parameter K dan jumlah data pelatihan. Keakuratan KNN kurang sensitif terhadap jumlah data pelatihan ketika parameter K memiliki kecil nilai. Namun, dengan peningkatan K, nilai OA menunjukkan perubahan signifikan dengan pelatihan kuantitas data: akurasi yang lebih rendah dengan skala sampel kecil dan akurasi yang lebih tinggi dengan sampel besarskala. Tren ini menjadi lebih jelas dalam kasus distribusi data seimbang dari pada data tidak seimbang. Untuk metode KNN, jumlah terdekat tetangga juga penting selain skala sampel, yang jumlah optimalnya sebanding dengan jumlah kategori terkecil. Kesimpulannya memverifikasi manfaat SVM</p>

	yang biasanya merupakan pemisahan yang akurat didekati hanya menggunakan sejumlah kecil data komparatif dengan mengambil keuntungan dari pesawat terbang untuk memisahkan titik data dalam ruang dimensi tinggi melalui pemetaan karakteristik yang dilakukan oleh fungsi kernel yang sesuai. Pada saat yang sama, itu juga menunjukkan bahwa jumlah dan pengaruhskala dataset pelatihan jauh lebih signifikan untuk KNN daripada SVM, yang juga sesuai dengan prinsip dasar KNN bahwa label titik data tertentu ditentukan oleh mayoritas poin tetangga.
--	---

No	6 (ENAM)
Judul Artikel	Multiple Kernel-Based SVM Classification of Hyperspectral Images by Combining Spectral, Spatial, and Semantic Information[6]
Topik	Data Mining
Data	In order to validate the effectiveness of the proposed method, we reported some experiments on two widely used datasets of the Indian Pines and the University of Pavia. The AVIRIS Indian Pines image was covered with different agricultural/forest land covers and 16 groups were recorded in the ground truth data. The University of Pavia image was obtained over an urban area in Italy, consisting of nine typical urban structures in its ground truth data. The RGB false color and the corresponding ground truth data for the three datasets are illustrated in Figure 2. For the Indian Pines dataset, 10% of the known samples per class in the ground truth data were randomly selected as the training set and the rest of the known samples made up the validation set. If the training samples of a certain class was less than 10, then we fixed the number to 10. For the University of Pavia dataset, the same number of the known samples for each class were randomly chosen for training and the rest were for validation.[6]
Metode / Algoritma	hyperspectral images; classification; spectral-spatial; multiple kernels; semantic information
Abstrak	In this study, we present a hyperspectral image classification method by combining spectral, spatial, and semantic information. The main steps of the proposed method are summarized as follows: First, principal component analysis transform is conducted on an original image to produce its

	<p>extended morphological profile, Gabor features, and superpixel-based segmentation map. To model spatial information, the extended morphological profile and Gabor features are used to represent structure and texture features, respectively. Moreover, the mean filtering is performed within each superpixel to maintain the homogeneity of the spatial features. Then, the k-means clustering and the entropy rate superpixel segmentation are combined to produce semantic feature vectors by using a bag of visual-words model for each superpixel. Next, three kernel functions are constructed to describe the spectral, spatial, and semantic information, respectively. Finally, the composite kernel technique is used to fuse all the features into a multiple kernel function that is fed into a support vector machine classifier to produce a final classification map. Experiments demonstrate that the proposed method is superior to the most popular kernel-based classification methods in terms of both visual inspection and quantitative analysis, even if only very limited training samples are available.[6]</p>
<p>Hasil</p>	<p>In order to validate the effectiveness of the proposed method, we reported some experiments on two widely used datasets of the Indian Pines and the University of Pavia. The AVIRIS Indian Pines image was covered with different agricultural/forest land covers and 16 groups were recorded in the ground truth data. The University of Pavia image was obtained over an urban area in Italy, consisting of nine typical urban structures in its ground truth data. The RGB false color and the corresponding ground truth data for the three datasets are illustrated in Figure 2. For the Indian Pines dataset, 10% of the known samples per class in the ground truth data were randomly selected as the training set and the rest of the known samples made up the validation set. If the training samples of a certain class was less than 10, then we fixed the number to 10. For the University of Pavia dataset, the same number of the known samples for each class were randomly chosen for training and the rest were for validation.[6]</p>

Kesimpulan	<p>In this section, the sensitivity of the parameters in the SVM-SSSK method is analyzed.</p> <p>Our experiments reported that the number of the superpixels S, the dimensionality of the semantic features D, and the weights in the spectral-spatial-semantic kernel greatly influence the performance of the proposed method. Furthermore, the sensitivity analysis of different training sets for all the methods is provided. In the following experiments, the training-validation sets for each dataset and the default parameter settings of the SVM-SSSK method were the same as those in Sections 4.3 and 4.4.[6]</p>
Penulis	<ol style="list-style-type: none"> 1. Yi Wang 2. Wenke Yu 3. Zhice Fang
Nama jurnal, Volume, Nomor, Tahun	Remote Sens. 2020, 12, 120
Ulasan artikel	<p>Dalam penelitian ini, kami menyajikan metode klasifikasi citra hiperspektral dengan menggabungkan spektral, informasi spasial, dan semantik. Langkah-langkah utama dari metode yang diusulkan dirangkum sebagai berikut: Pertama, transformasi analisis komponen utama dilakukan pada gambar asli untuk menghasilkan nyaprofil morfologis yang diperluas, fitur Gabor, dan peta segmentasi berbasis superpixel. Untuk model informasi spasial, profil morfologi yang diperluas dan fitur Gabor digunakan untuk mewakili fitur struktur dan tekstur, masing-masing. Selain itu, penyaringan rata-rata dilakukan di dalam masing-masing superpixel untuk menjaga homogenitas fitur spasial. Kemudian, k-means clustering dan thesegmentasi superpixel rate entropi digabungkan untuk menghasilkan vektor fitur semantik dengan menggunakan sekantong model kata-kata visual untuk setiap superpixel. Selanjutnya, tiga fungsi kernel dibangun untuk menggambarkan informasi spektral, spasial, dan semantik, masing-masing. Akhirnya, kernel komposit Teknik ini digunakan untuk menggabungkan semua fitur menjadi fungsi multi-kernel yang dimasukkan ke dalam dukungan classifier mesin vektor untuk menghasilkan peta klasifikasi akhir. Eksperimen menunjukkan bahwa metode yang diusulkan lebih unggul daripada metode klasifikasi berbasis kernel paling populer dalam hal keduanya inspeksi visual dan analisis kuantitatif, bahkan jika hanya sampel pelatihan yang sangat terbatas yang tersedia. Hasil percobaan pada dua dataset hiperspektral mengkonfirmasi kesimpulan berikut: (1) Kombinasi fitur spektral, spasial dan semantik</p>

	<p>diMetode SVM-SSSK dapat secara efektif meningkatkan akurasi klasifikasi. Misalnya, akurasi keseluruhan nilai dengan metode SVM-SSSK ketika $\mu \text{ SPE} + \mu \text{ SPA} < 1$ jauh lebih tinggi dari itu ketika $\mu \text{ SEM} = 0.2$ Metode SVM-SSSK dapat menghasilkan hasil klasifikasi yang lebih akurat dari pada semua HSI berbasis kernel metode klasifikasi yang disebutkan dalam Bagian 4.2, bahkan dengan sampel pelatihan terbatas. Dalam tulisan ini, kami mengusulkan metode klasifikasi HSI dengan menggabungkan spektral, spasial dan informasi semantik menjadi classifier SVM menggunakan banyak kernel. Secara khusus, kernel spektral didefinisikan menggunakan fitur spektral, kernel spasial dibangun dengan menumpuk struktur dan informasi tekstur setiap piksel, dan kernel semantik dikembangkan dengan melakukan BOVW algoritma dalam setiap superpixel gambar. Keuntungan utama dari metode yang diusulkan adalah dua kali lipat: pertama, informasi semantik merupakan suplemen penting selain yang umum digunakan informasi spektral dan spasial. Kedua, informasi tambahan diintegrasikan ke dalam fungsi kernel dapat meningkatkan kinerja klasifikasi.</p>
--	---

No	7 (TUJUH)
Judul Artikel	Using PCA combined SVM in the classification of eutrophication in DEZ reservoir (Iran)[7]
Topik	Data Mining
Data	<p>In the relationships, “e” is a vector (matrix) in which all its elements are equal to 1, $w \in R^n$ and x_i and α_i are respectively the slack variables and Lagrange multipliers, and C is the upper limit α_i and greater than zero. Q is a positive semi-definite matrix, as it can be anything, $K(x_i - x_j) \leq \sum_j (X_i)^T \cdot j(x_j)$ and $Q_{ij} \leq y_i \cdot y_j$. $K(x_i, x_j)$ is defined as a Kernel function. Here, training vectors (x_i) by α function are introduced to a data space with more imaging sizes. The classical learning techniques, including ANNs, are designed to minimize error on the training data set (minimization of the experimental error). Unlike these methods, SVMs are based on the minimization of the structural error. In other words, the system structure unlike neural network is not defined. On one hand training will minimize the experimental error and on other hand will minimize the structural error of the system, and finally, the most optimal system structure will be determined (Bazargan-Lari et al., 2010). Both SVMs</p>

	<p>and ANNs have high speed and accuracy, however, in compared to ANNs, SVMs are more stable and have higher implementation capacity (Xin et al., 2010). Moreover, SVMs are more capable for learning test data than other methods. In classical models such as ANNs, the network structure is determined before training and it will be not optimal, but in SVM models network structure also be optimized with data weights (Xin et al., 2010).[7]</p>
Metode / Algoritma	<p>data classification, Dez reservoir, eutrophication, modeling, principle component analysis, support vector machines</p>
Abstrak	<p>Eutrophication is water pollution initiated by high amounts of plant nutrients. With the excess influx of nutrients from human activities, the eutrophication process begins and causes a breeding ground for algae. The amount of nutrients present in any given cycle will be higher than the levels present in previous cycles. Therefore, it is very important to manage water quality in lakes and dams to prevent and to slow or to reverse the eutrophication process. This can be ensured by using effective and comprehensive tools for prediction and modeling of eutrophication in a water resource. In this study, Support Vector Machines (SVM) were first used for eutrophication classification in the third largest dam (Dez) in the world. The technique of Principal Component Analysis (PCA), as an input pre-processing method, was used to reduce the number of input variables in the model. The technique was found to be effective in reducing the number of input variables from 20 to 4 (TP, TN, DO, temperature). Subsequently, the model support vector machine classifier was developed using these four variables. The results showed the important role of preprocessing variables by PCA. An accuracy of 98% was achieved by the SVM classification method, which demonstrated the potential effect of eutrophication classification, and consequently showed its ability for pattern recognition of this phenomenon. Modeling with SVM technique can be attractive with high accuracy, especially for monitoring the quality of water in reservoirs. Additionally, the method can be used as a tool to develop new management approaches.[7]</p>
Hasil	<p>The eutrophication index is calculated according to the Eq. (1) and is shown on Fig. 3. Based</p>

	<p>on these results, it was found that the Dez reservoir was in an eutrophic state during the period from November 2008 to the end of December 2008, and was in a mesotrophic state from January 2008 to April 2009. These conditions may be due to the decrease in sunlight and temperature and increase in precipitation. On the other hand, from April 2009 until the end of May 2009, there was a gradual increase in temperature. Durign this period, the graph has peaked and showed a substantial increase in temperature, and decrease in precipitation in summer. This resulted in an eutrophic condition in the reservoir body and this situation continued until October 2009. According to the above content, eutrophic and mesotrophic conditions in reservoir at the desired period interval were classified as related classes in modeling of the reservoir. These classes were used in next sections for classification by SVMs.[7]</p>
Kesimpulan	<p>In this study, it was shown that the use of pattern recognition technology was one of the best tools for the assessment of eutrophication in Dez reservoir in Iran. The results obtained in the different classification methods showed that SVMs were one of the most supportive and the most accurate method in water resources. This method has a lot of capability for gaining accurate result, and has high speed for calculation. However, one of difficulties to use this method is complexity of calculation. For solving this problem, the PCA technique was used in this study. This technique can reduce complexity by removing useless parameters. The results showed that the simultaneous using of SVMs and PCA techniques as complementary tools, the ability for classifying of a specific environmental phenomenon was very high. Therefore, it is suggested that these two methods can be used together in future studies, particularly in matters of classification of the environmental phenomena, as in other studies it was achieved 94% accuracy with the use of Siminerood classified by the SVM technique, while the SVMs combined PCA approach gave higher accuracy in the classification of our case as shown in the present study.[7]</p>
Penulis	<ol style="list-style-type: none"> 1. Saeed Bashiri, 2. Abbas Akbarzadeh, 3. Mansur Zarrabi, 4. Kaan Yetilmezsoy,

	5. Merv Fingas, 6. Mahsa Moosakhaani
Nama jurnal, Volume, Nomor, Tahun	Environmental Engineering and Management Journal, September 2017, Vol. 16, No. 9, 2139-2146
Ulasan artikel	<p>Eutrofikasi adalah polusi air yang diprakarsai oleh nutrisi tanaman dalam jumlah tinggi. Dengan masuknya kelebihan nutrisi dari manusia kegiatan, proses eutrofikasi dimulai dan menyebabkan tempat berkembang biak untuk ganggang. Jumlah nutrisi yang ada dalam setiap pemberian siklus akan lebih tinggi dari level yang ada di siklus sebelumnya. Karena itu, sangat penting untuk mengelola kualitas air di danau dan bendungan untuk mencegah dan memperlambat atau membalikkan proses eutrofikasi. Ini dapat dipastikan dengan menggunakan efektif dan alat komprehensif untuk prediksi dan pemodelan eutrofikasi dalam sumber daya air. Dalam penelitian ini, Support Vector Machines(SVM) pertama kali digunakan untuk klasifikasi eutrofikasi di bendungan terbesar ketiga (Dez) di dunia. Teknik Kepala Sekolah Analisis Komponen (PCA), sebagai metode pra-pemrosesan input, digunakan untuk mengurangi jumlah variabel input dalam model. Teknik ini ditemukan efektif dalam mengurangi jumlah variabel input dari 20 menjadi 4 (TP, TN, DO, suhu). Selanjutnya, model classifier mesin vektor dikembangkan menggunakan empat variabel ini. Hasil penelitian menunjukkan peran penting variabel preprocessing oleh PCA. Keakuratan 98% dicapai dengan metode klasifikasi SVM, yang menunjukkan efek potensial dari klasifikasi eutrofikasi, dan akibatnya menunjukkan kemampuannya untuk pengenalan pola fenomena ini. Pemodelan dengan teknik SVM dapat menarik dengan akurasi tinggi, terutama untuk memantau kualitas air di waduk. Selain itu, metode ini dapat digunakan sebagai alat untuk mengembangkan pendekatan manajemen baru. Hasil penelitian menunjukkan bahwa penggunaan simultan SVM dan teknik PCA sebagai pelengkap alat, kemampuan untuk mengklasifikasikan suatu spesifik Fenomena lingkungan sangat tinggi. Karena itu, disarankan agar kedua metode ini dapat digunakan bersama dalam studi masa depan, khususnya dalam hal klasifikasi fenomena lingkungan, seperti dalam penelitian lain mencapai akurasi 94% dengan penggunaan Siminerood diklasifikasikan oleh teknik SVM, sementara SVM menggabungkan pendekatan PCA memberi akurasi yang lebih tinggi dalam klasifikasi kasus kami sebagai ditunjukkan dalam penelitian ini. Dalam</p>

	<p>penelitian ini, ditunjukkan bahwa penggunaan teknologi pengenalan pola adalah salah satu yang terbaik alat untuk penilaian eutrofikasi di Dezwaduk di Iran. Hasil yang didapat berbeda metode klasifikasi menunjukkan bahwa SVM adalah salah satunya metode yang paling mendukung dan paling akurat di Indonesia sumber air. Metode ini memiliki banyak kemampuan untuk mendapatkan hasil yang akurat, dan memiliki kecepatan tinggi untuk perhitungan. Namun, salah satu kesulitan menggunakan ini Metode adalah kompleksitas perhitungan. Untuk menyelesaikan ini Masalahnya, teknik PCA digunakan dalam penelitian ini. Teknik ini dapat mengurangi kompleksitas dengan menghapus parameter tidak berguna.</p>
--	--

No	8 (DELAPAN)
Judul Artikel	CLASSIFICATION OF H&E STAINED ORAL CANCER IMAGES USING STATISTICAL AND HISTOGRAM FEATURES WITH SVM[8]
Topik	Data Mining
Data	The accuracy of the classification is 97.5%. If we consider class one as positive and class 2 as negative then, the rate of true positive is 100%, the rate of false positive is 5%, the rate of true negative is 95%, the rate of false negative is 0%. This means 5% of the benign images are classified as malignant whereas 0% of the malignant images are classified as benign.[8]
Metode / Algoritma	H&E stain, SVM, Oral Cancer, Histogram.
Abstrak	Oral cancer is the cancer which occurs in the oral cavity or the chewable area of the mouth. In this paper, the statistical features are measured on the Hematoxilin and Eosin (H&E) stained microphotographs. Statistical and Histogram features are fetched from both, histogram un-equalized image as well as histogram equalized image. H&E stained images are of 10X magnification. Classification is carried out before and after application of Principle Component Analysis (PCA) on the features. Support Vector Machine (SVM) delivered the classification with the learning accuracy of 97 percent, sensitivity of 100% and specificity of 95%.[8]
Hasil	The confusion matrix of the result is as shown in the figure 2. Class 1 is the set of malignant images where as class 2 is the set of benign images. As we can see from the figure 3, all class 1 images are classified correctly whereas 5% of class 2 images are classified as class 1. Class 1 is the set of

	<p>malignant images where as class 2 is the set of benign images. As we can see from the figure 2, all class 1 images are classified correctly whereas 5% of class 2 images are classified as class 1. The accuracy of the classification is 97.5%. If we consider class one as positive and class 2 as negative then, the rate of true positive is 100%, the rate of false positive is 5%, the rate of true negative is 95%, the rate of false negative is 0%. This means 5% of the benign images are classified as malignant whereas 0% of the malignant images are classified as benign. Some of the images belonging to malignant class are shown in figure 4. Figure 5 depicts the benign class images. Figure 6 provides the graphical view of the statistics of different features for both the classes.[8]</p>
Kesimpulan	<p>The confusion matrix of the result is as shown in the figure 2. Class 1 is the set of malignant images where as class 2 is the set of benign images. As we can see from the figure 3, all class 1 images are classified correctly whereas 5% of class 2 images are classified as class 1. Class 1 is the set of malignant images where as class 2 is the set of benign images. As we can see from the figure 2, all class 1 images are classified correctly whereas 5% of class 2 images are classified as class 1. The accuracy of the classification is 97.5%. If we consider class one as positive and class 2 as negative then, the rate of true positive is 100%, the rate of false positive is 5%, the rate of true negative is 95%, the rate of false negative is 0%. This means 5% of the benign images are classified as malignant whereas 0% of the malignant images are classified as benign. Some of the images belonging to malignant class are shown in figure 4. Figure 5 depicts the benign class images. Figure 6 provides the graphical view of the statistics of different features for both the classes.[8]</p>
Penulis	<ol style="list-style-type: none"> 1. Rajashekhargouda C. Patil, 2. Mahesh P. K., 3. Associate Professor, 4. Professor and Head, Dept of ECE, 5. Dept. Electronics & Communication, 6. Don Bosco Inst. Of Tech., Bengaluru, India
Nama jurnal, Volume, Nomor, Tahun	IJRAR November 2018, Volume 5, Issue 4
Ulasan artikel	<p>Kanker mulut adalah kanker yang terjadi di rongga mulut atau daerah kunyah mulut. Dalam tulisan ini, fitur statistik adalah diukur pada mikrophotograf bernoda Hematoxilin dan Eosin (H&E). Fitur statistik dan Histogram diambil dari keduanya, histogram un-equalized image serta histogram equalized image. Gambar yang diwarnai H&E memiliki pembesaran 10X. Klasifikasi dilakukan sebelumnya dan setelah penerapan Prinsip Komponen Analisis (PCA) pada fitur. Support Vector Machine (SVM) menyampaikan klasifikasi dengan akurasi pembelajaran 97 persen, sensitivitas 100% dan spesifisitas 95%.</p>

	<p>Kanker adalah pertumbuhan dan pembelahan sel yang tidak terkendali. Kanker adalah penyakit yang memiliki angka kematian tinggi dalam perkembangan dan negara-negara terbelakang. Untuk diagnosis kanker mulut, biopsi jaringan adalah standar emas yang dilakukan oleh pihak medis masyarakat. Setelah jaringan dibiopsi, kemudian diiris menjadi irisan lima mikron dan potongan jaringan pada slide diwarnai menggunakan noda H&E. Gambar bernoda seperti itu kemudian diamati di bawah mikroskop dan keputusan dibuat oleh ahli patologi apakah akan mengklasifikasikan jaringan yang diperiksa sebagai ganas atau jinak. Penelitian ini menggunakan foto-foto yang diambil dari noda H&E tersebut irisan jaringan di bawah mikroskop yang memiliki tingkat perbesaran 10X. Ahli patologi tidak menggunakan fitur statistik dijelaskan dalam penelitian ini di mana ketika mereka melakukan klasifikasi pada ukuran inti sel dan parameter lainnya. Statistik fitur yang digunakan dalam penelitian ini adalah mean, median, energi, entropi, skewness, kurtosis, kontras, varians, standar deviasi, nilai binyang hitungannya minimum, nilai bin yang hitungannya maksimum, tingkat ambang batas global, korelasi, dan homogenitas.</p> <p>Matriks kebingungan hasilnya adalah seperti yang ditunjukkan pada gambar 2. Kelas 1 adalah himpunan gambar ganas di mana sebagai kelas 2 adalah himpunan gambar jinak. Seperti yang dapat kita lihat dari gambar 3, semua gambar kelas 1 diklasifikasikan dengan benar sedangkan 5% dari gambar kelas 2 adalah diklasifikasikan sebagai kelas 1. Kelas 1 adalah himpunan gambar ganas di mana sebagai kelas 2 adalah himpunan gambar jinak. Seperti yang bisa kita lihat dari Gambar 2, semua gambar kelas 1 diklasifikasikan dengan benar sedangkan 5% dari gambar kelas 2 diklasifikasikan sebagai kelas 1. Keakuratan klasifikasi adalah 97,5%. Jika kita menganggap kelas satu sebagai positif dan kelas 2 sebagai negatif maka, laju benar positif adalah 100%, tingkat false positive adalah 5%, tingkat true negative adalah 95%, tingkat false false adalah 0%. Ini berarti 5% dari gambar jinak diklasifikasikan sebagai ganas sedangkan 0% dari gambar ganas diklasifikasikan sebagai jinak.</p>
--	--

No	9 (SEMBILAN)
Judul Artikel	SVM-DS fusion based soft fault detection and diagnosis in solar water heaters[9]
Topik	Data Mining
Data	For obtaining fault data, a test is conducted in solar energy testing center located in Shun Yi, Beijing, China. The SWH in the test is an ordinary SWH with a flat-plate solar collector (Sun et al., 2017c). The hot water is stored in the tank to bring heat to rooms. Fault-free test is first conducted.

	<p>Detection and diagnosis are all made by way of comparison, since fault is a change in normal state. Any detection and diagnosis are modeled based on normal data. The test lab is shown in Figure 6. Fault data are captured by way of calculating thermal efficiency with the installed flow sensor, voice sensor, and temperature sensor (Sun et al., 2017d). After studying the experimental data of faults including dusty solar collector, heating empty collector, heat transfer inefficiency and leakage due to the loose valve, we find the frame of discernment for the SWH in diagnosis $H = \{F1, F2, F3, F4\}$, where F1 refers to dusty solar thermal collector, F2 refers to heating empty collector, F3 refers to heat transfer inefficiency, and F4 refers to leakage due to the loose valve. Before extracting features, we preprocess the signal data by waveform interception and signal denoising.[9]</p>
<p>Metode / Algoritma</p>	<p>Solar water heaters, fault diagnosis, support vector machine, D-S evidence theory, multi-source information fusion</p>
<p>Abstrak</p>	<p>As faults in the solar water heaters are structurally complicated and highly correlated, an approach of fault diagnosis on the basis of support vector machine and D-S evidence theory has been proposed in this study, attempting to enhance the system's thermal efficiency and ensure its safety. In the approach presented, information of audio conditions, temperature at the outlet of solar thermal collectors, hourly flow and hourly heat transfer rate are accessible, which facilitate the feature evidence and are diagnosed by using "one-against-one" multi-class support vector machine. Experiments are conducted to diagnose fault information fusion and the results show that the diagnosis approach proposed in this study is of high reliability with fewer uncertainties, indicating that the approach is capable to recognize and diagnose solar water heater faults accurately.[9]</p>
<p>Hasil</p>	<p>Based on the real-time data collected in the system, the above-mentioned extracting methods are adopted to process the audio data of faults in SWHS and find their weighted averages. Their signal features are extracted and make analysis on them. The mapminmax function in MATLAB is used to normalize the original vibration data and audio data (Mirvakili et al., 2012) which are decomposed and restructured by wavelet packet transform.</p>

	<p>Although audio data are difficult to be digitized, the sound of water heater collected can be transformed into waveform data which are used in research (Fu and Liu, 2017b). We calculate the energy value in each frequency band whose share in the total energy is referred to construct a set of diagnostic feature vectors $E1/4\{A1,A2,A3,A4,A5,A6,A7,A8\}$; extracting the signal features of temperature and flow depends on a fusion of multiple sensor data in different conditions at different time. Heat transfer rate is hourly calculated based on the above parameters, and thus a set of diagnostic feature vectors is constructed. The correlation between features' parameters and faults is determined, which facilitates the classification of faults. The data of temperature at outlet of the solar thermal collector, hourly flow and hourly heat transfer rate of the SWH are collected with multiple sensors and normalized to construct sets of diagnostic feature vectors $E2/4\{B1,B2,B3,B4,B5\}$, $E3/4\{C1,C2,C3,C4,C5\}$ and $E4/4\{D1,D2,D3,D4,D5\}$. The four sets mentioned above constitute the faults parameter space of the SWHS $E1/4\{E1,E2,E3,E4\}$ as shown in Tables 2 to 5.[9]</p>
Kesimpulan	<p>Solar energy is mainly exploited and consumed by the way of SWH, yet a survey among facilities in practice reveals that SWHS is low-efficient and failures arise from time to time, leading to waste. As intelligent building advances and the cost arising from running electronic devices and measuring equipment go downhill, sensors have been widely applied in engineering to facilitate data acquisition and control system inspection. In the long-term operation, however, it is unlikely to ensure stability in the sensors. To address this problem, a fault diagnosis approach in SWHSs is proposed to detect and diagnose common faults and improve stability.[9]</p>
Penulis	<ol style="list-style-type: none"> 1. Song Jiang 2. Minjie Lian 3. Caiwu Lu 4. Shunling Ruan 5. Zhe Wang 6. Baiyu Chen
Nama jurnal, Volume, Nomor, Tahun	<p>Energy Exploration & Exploitation 2019, Vol. 37(3) 1125–1146</p>
Ulasan artikel	<p>Karena kesalahan dalam pemanas air matahari secara struktural rumit dan sangat berkorelasi, sebuah pendekatan diagnosis kesalahan berdasarkan mesin vektor dukungan dan teori bukti DS telah diusulkan dalam penelitian ini,</p>

	<p>berusaha untuk meningkatkan efisiensi termal dan memastikan system keamanannya. Dalam pendekatan yang disajikan, informasi kondisi audio, suhu di outlet pengumpul panas matahari, aliran perjam dan laju perpindahan panas per jam dapat diakses, yang memfasilitasi bukti fitur dan didiagnosis dengan menggunakan dukungan multi-kelas «satu lawan satu»mesin vektor. Eksperimen dilakukan untuk mendiagnosis penggabungan informasi kesalahan dan hasilnya menunjukkan bahwa pendekatan diagnosis yang diusulkan dalam penelitian ini adalah keandalan tinggi dengan lebih sedikit uncer-noda, menunjukkan bahwa pendekatan ini mampu mengenali dan mendiagnosis pemanas air surya kesalahan secara akurat Energi matahari terutama dieksploitasi dan dikonsumsi oleh SWH, namun survei antara fasilitas dalam praktiknya mengungkapkan bahwa SWHS efisien-rendah dan kegagalan timbul dari waktu ke waktu, menyebabkan limbah. Untuk mengatasi masalah ini, pendekatan diagnosis kesalahan pada SWHS diusulkan untuk mendeteksi dan mendiagnosis kesalahan umum dan meningkatkan stabilitas. Katup yang berfungsi dengan baik sangat penting untuk sistem yang stabil. Dalam teori kontrol otomatis, mereka disebut sebagai sakelar logika pada 0 atau 1. Sensor suhu dan sensor level air terkon dingin, memungkinkan uraian menyeluruh dalam berbagai fitur sistem. Statis polanya adalah kapan sistem tidak berfungsi, yang biasanya terjadi pada malam hari atau saat perbedaan suhu untuk sirkuit air lebih rendah dari yang diharapkan, misalnya, suhu rendah perature di outlet collector gagal untuk menghidupkan pompa. Pola dinamis aktif saat perbedaan suhu antara outlet kolektor dan tangki penyimpanan cukup tinggi nyalakan pompa ke sirkuit. Karena faktor termasuk radiasi panas, suhu luar dan kecepatan angin, waktu kerja sistem dengan pompa sakelar pendek setiap hari rute . Dalam pola statis, pompa rangkaian di SWH tidak berfungsi saat semua konfigurasi berada dalam stabilitas relatif dengan perubahan yang terlihat karena meteorologi luar ruang faktor. Stabilitas ini memungkinkan kami untuk memvalidasi keandalan sensor yang diposisikan oleh cincin untuk pengamatan data jangka panjang dan hubungan logis antara SWH dalam normal operasi .</p>
--	---

No	10 (SEPULUH)
Judul Artikel	Efficient technique to estimate age using PCA & multi SVM classification[10]
Topik	Data Mining
Data	In particular, the most common technique in practice has been to build one-versus-rest classifiers and to choose the class which classifies the test datum with greatest margin. Another strategy is to build a set of one-versus-one classifiers, and to choose the class that is selected by the most classifiers. While this involves building classifiers, the time for training classifiers may actually decrease, since the training data set for each classifier is much smaller. However, these are not very elegant approaches to solving multiclass problems. A better alternative is provided by the construction of multiclass SVMs, where we build a two-class classifier over a feature vector derived from the pair consisting of the input features and the class of the data[10]
Metode / Algoritma	Facial Images; SVM; PCA Algorithm; Age Estimation; Multi SVM
Abstrak	Human interaction with computer is recent trend in computer technology. In order to obtain age information, image-based age estimation systems have been developed using information from the human facial images. We develop a new technology which identify the characteristic of human being like age. Facial information study will lead us to identify age. While generic growth patterns that are characteristics of different age groups can be identified. In order to create an accurate algorithm for age classification, we build an appropriate datasets for training is build using SVM classification method. We build an application base on MATLAB software to estimate age based on the trained data. Feature of face is extracted using PCA method and stored the data in array matrix. The accuracy of the trained data is 95.65%. We have an average matching percentage of 92%. We have Euclidean distance calculation method to verify the matched data and we found 100% verified.[10]
Hasil	This feature are collected from all different age human and stored as train dataset. The process of training the data SVM using PCA algorithm. The test dataset is also collected as same process of training dataset. So finally we have done PCA based age estimation using SVM classification and improved the performance and accuracy compare to existing design and identification rate is close

	to 100%. Figure 4. Age Estimation Application Result Page The result is based on the ROC curve analysis. The ROC curve is derived based on true positive rate with respect to false positive rate, where the values are calculated from the algorithm by testing several test images and calculated false acceptance ratio and false rejected ratio.[10]
Kesimpulan	In this paper we have done PCA based age estimation using Multi SVM classification. In future work we will work on the generative approach for the age estimation in which we have to generate the model of the face of the person to estimate the age. This can be used for ethnic group of facial images.[10]
Penulis	1. Laiphrakpam Jibanpriya Devi 2. Dr. J L Mazher Iqbal
Nama jurnal, Volume, Nomor, Tahun	International Journal of Engineering & Technology, 7 (1.2) (2018) 81-84
Ulasan artikel	Seiring perkembangan teknologi, biometrik muncul sebagai bidang penelitian yang menarik dan perlu dalam skenario hari ini. Penelitian dalam Biometrik melibatkan proses identifikasi dan otentikasi identitas seseorang. Untuk tujuan identifikasi berpose ada berbagai mekanisme dalam biometrik melalui sidik jari, pengenalan wajah, deteksi iris, cetak telapak tangan dll. Pengenalan wajah dibiometrik banyak digunakan di bidang keamanan untuk mengkonfirmasi identifikasi. Ada sistem yang berbeda menggunakan Gambar Wajah adalah Otentikasi, Ras, etnis dan jenis kelamin. Salah satu Identifikasi adalah estimasi umur. Estimasi usia dalam proses estimasi usia seseorang dari dia karakteristik biologis. Estimasi usia adalah penelitian yang menarik bunga sebagai tren terkini. Penjahat mana pun yang tertangkap basah melakukan aksi atau setelah tindakan dapat mudah diidentifikasi. Setiap orang mati atau hidup yang tidak dikenal yang ditemukan dapat dilacak dari catatan mereka. Usia orang mati yang tidak dikenal ditemukan dapat dengan mudah diidentifikasi Pengguna dapat didiskriminasi sesuai ketika mengunjungi halaman web. Pengguna cloud akan diautentikasi menggunakan Pengenalan wajah dan karenanya data dapat diamankan. Untuk mengetahui caranya untuk membangun layanan web yang akan melakukan proses otentikasi dalam server. Kami harus membangun layanan web yang juga mengakses webcam yaitu perangkat keras yang ada di komputer pengguna. Web ini layanan akan melakukan preprocessing gambar dan mengirim data sebagai uji data ke server dan terima oleh API layanan yang berjalan di server. Kami membangun basis aplikasi pada perangkat lunak MATLAB untuk memperkirakan berdasarkan usia pada data yang terlatih. Fitur wajah diekstraksi menggunakan metode PCA dan menyimpan data dalam matriks array. Keakuratan data yang dilatihkan adalah 95,65%. Kami memiliki persentase pencocokan rata-rata 92%. Kami memiliki metode perhitungan jarak Euclidean untuk

	<p>memverifikasi data yang cocok dan kami menemukan 100% terverifikasi.</p> <p>Fitur ini dikumpulkan dari semua usia manusia dan disimpan sebagai dataset kereta. Proses pelatihan data SVM menggunakan PCA algoritma. Dataset tes juga dikumpulkan sebagai proses yang sama dataset pelatihan.</p>
--	---

No	11 (SEBELAS)
Judul Artikel	Classification of Multiple Chinese Liquors by Means of a QCM-based E-Nose and MDS-SVM Classifier[11]
Topik	Data Mining
Data	<p>In this experiment, we used a QCM-based e-nose [14] (designed as shown in Figure 3) to obtain Chinese liquors' characteristic information, i.e., to obtain the resonator frequency signal values (RFSVs) of an eight-channel sensor array as raw data. Our e-nose was composed of three main components: (i) a gas flow system (containing a thermo-hygrostat system and an air pump), (ii) a sensor array system (containing an eight-channel gas sensor array) and (iii) an electronic circuit (containing a digital frequency counter) and pattern recognition system (Figure 4). In the gas flow system, a flow-controllable air pump was used to generate gas flow. The ambient air was used as the carrier gas to deliver the sample odor through the sensor array chamber at a flow rate of 25 mL/s. The gas-flow system was controlled by valves to switch between the filter bottle and sample bottle. The sensor array system (shown in Figure 5) consisted of eight QCM-based sensors, each of which was specially selected to detect the liquor volatiles, as listed in Table 2. The sensors were installed inside a chamber (shown in Figure 6), designed to evenly distribute the gas flow through all sensors, which was made from Teflon to prevent odor adsorption within the chamber. The electronic circuit provided output from the resonators of the eight sensors. Moreover, the data processing and visualization were conducted by the pattern recognition system[11]</p>
Metode / Algoritma	Chinese liquor classification; Multidimensional scaling (MDS); Support Vector Machine (SVM); QCM-based e-nose
Abstrak	<p>Chinese liquors are internationally well-known fermentative alcoholic beverages. They have unique flavors attributable to the use of various bacteria and fungi, raw materials, and</p>

	<p>production processes. Developing a novel, rapid, and reliable method to identify multiple Chinese liquors is of positive significance. This paper presents a pattern recognition system for classifying ten brands of Chinese liquors based on multidimensional scaling (MDS) and support vector machine (SVM) algorithms in a quartz crystal microbalance (QCM)-based electronic nose (e-nose) we designed. We evaluated the comprehensive performance of the MDS-SVM classifier that predicted all ten brands of Chinese liquors individually. The prediction accuracy (98.3%) showed superior performance of the MDS-SVM classifier over the back-propagation artificial neural network (BP-ANN) classifier (93.3%) and moving average-linear discriminant analysis (MA-LDA) classifier (87.6%). The MDS-SVM classifier has reasonable reliability, good fitting and prediction (generalization) performance in classification of the Chinese liquors. Taking both application of the e-nose and validation of the MDS-SVM classifier into account, we have thus created a useful method for the classification of multiple Chinese liquors.[11]</p>
Hasil	<p>Taking Moutai liquor sample as example, a group of raw data, 8×200 RFSVs obtained by sensor-1 to sensor-8 (100 RFSVs per min for each sensor), are listed in Table 3. Their distributions are displayed in Figure 8. RFSV distributions exhibited unique magnitudes and shapes[11]</p>
Kesimpulan	<p>This paper presented a pattern recognition system for classifying ten brands of Chinese liquors based on MDS and SVM algorithms in the QCM-based e-nose we designed. We evaluated the comprehensive performance of the MDS-SVM classifier for predicting all ten brands of Chinese liquors individually. The prediction accuracy of the MDS-SVM classifier is superior to that of both the LDA and BP-ANN classifiers. Numerical experiment results of the classification of the ten brands of Chinese liquors showed that our recognition system is a viable solution for liquor classification problems[11]</p>
Penulis	<ol style="list-style-type: none"> 1. Qiang Li, Yu Gu 2. Jing Jia
Nama jurnal, Volume, Nomor, Tahun	Sensors 2017, 17, 272
Ulasan artikel	<p>Makalah ini menyajikan sistem pengenalan pola untuk mengklasifikasikan sepuluh merek minuman keras Cina berdasarkan pada algoritma MDS dan SVM pada e-nose berbasis QCM yang kami rancang. Kami mengevaluasi kinerja</p>

	<p>komprehensif dari classifier MDS-SVM untuk memprediksi semua sepuluh merek minuman keras Cina secara individual. Keakuratan prediksi dari MDS-SVM classifier lebih unggul dari kedua LDA dan pengklasifikasi BP-ANN. Hasil percobaan numerik klasifikasi sepuluh merek Cina liquors menunjukkan bahwa sistem pengakuan kami adalah solusi yang layak untuk masalah klasifikasi minuman keras. Pendekatan yang diusulkan berdasarkan aplikasi MDS dan SVM memiliki sifat-sifat berikut:</p> <ul style="list-style-type: none"> • Akurasi yang baik pada ukuran sampel yang cukup kecil, • Biaya kalibrasi rendah, • Analisis obyektif dan penilaian komprehensif minuman keras Cina, • Kinerja adaptasi dan prediksi (generalisasi) yang baik pada kondisi kerja umum. Secara meyakinkan, sistem yang kami usulkan dapat menemukan aplikasi praktis dalam kualitas minuman keras Cina kontrol dan penilaian rasa. Minuman keras Cina adalah minuman beralkohol fermentasi yang terkenal secara internasional. Mereka memiliki rasa unik yang disebabkan oleh penggunaan berbagai bakteri dan jamur, bahan baku, dan proses produksi. Mengembangkan metode baru, cepat, dan andal untuk mengidentifikasi banyak orang Cina minuman keras adalah signifikansi positif. Makalah ini menyajikan sistem pengenalan pola untuk mengklasifikasikan sepuluh merek minuman keras Cina berdasarkan penskalaan multidimensi (MDS) dan mesin vektor dukungan Algoritme (SVM) dalam hidung elektronik berbasis kuarsa (QCM) berbasis elektronik (e-nose) kami rancang. Kami mengevaluasi kinerja komprehensif dari classifier MDS-SVM yang memprediksi sepuluh merek minuman keras Cina secara individual. Akurasi prediksi (98,3%) menunjukkan kinerja superior Klasifikasi MDS-SVM melalui klasifikasi BP-ANN (back-propagation artificial neural network) (93,3%) dan pengelompokan rata-rata analisis diskriminan linier (MA-LDA) (87,6%). MDS-SVM classifier memiliki keandalan yang wajar, pemasangan yang baik dan kinerja prediksi (generalisasi) diklasifikasi minuman keras Cina. Mengambil kedua aplikasi e-nose dan validasi Dengan mempertimbangkan klasifikasi MDS-SVM, kami telah menciptakan metode yang berguna untuk klasifikasi beberapa minuman keras Cina. Mengambil sampel minuman keras Moutai sebagai contoh, sekelompok data mentah, 8×200 RFSV yang diperoleh oleh sensor-1 ke sensor-8 (100 RFSVs per menit untuk setiap sensor), tercantum pada Tabel 3. Distribusi mereka ditampilkan pada Gambar 8. Distribusi RFSV menunjukkan besaran dan bentuk yang unik
--	---

No	12 (DUA BELAS)
----	-----------------------

Judul Artikel	Optimization Performance Comparison of Three Different Group Intelligence Algorithms on a SVM for Hyperspectral Imagery Classification[12]
Topik	Data Mining
Data	Our tests were performed on three hyperspectral images: the University of Pavia image, Indian Pines image, and Salinas image, which represent the city, complicated farmland, and simple farmland, respectively. The images were downloaded from Purdue University's MultiSpec website (ftp://ftp.ecn.purdue.edu/biehl/MultiSpec/) and their details are as follows[12]
Metode / Algoritma	group intelligence algorithms; genetic algorithms; particle swarm optimization; artificial bee colony; SVM; parameter optimization
Abstrak	Group intelligence algorithms have been widely used in support vector machine (SVM) parameter optimization due to their obvious characteristics of strong parallel processing ability, fast optimization, and global optimization. However, few studies have made optimization performance comparisons of different group intelligence algorithms on SVMs, especially in terms of their application to hyperspectral remote sensing classification. In this paper, we compare the optimization performance of three different group intelligence algorithms that were run on a SVM in terms of five aspects by using three hyperspectral images (one each of the Indian Pines, University of Pavia, and Salinas): the stability to parameter settings, convergence rate, feature selection ability, sample size, and classification accuracy. Particle swarm optimization (PSO), genetic algorithms (GAs), and artificial bee colony (ABC) algorithms are the three group intelligence algorithms. Our results showed the influence of these three optimization algorithms on the C-parameter optimization of the SVM was less than their influence on the σ -parameter. The convergence rate, the number of selected features, and the accuracy of the three group intelligence algorithms were statistically significant different at the $p = 0.01$ level. The GA algorithm could compress more than 70% of the original data and it was the least affected by sample size. GA-SVM had the highest average overall accuracy (91.77%), followed by ABC-SVM (88.73%), and PSO-SVM (86.65%). Especially, in complex scenes (e.g., the Indian Pines image), GA-SVM showed the highest

	<p>classification accuracy (87.34%, which was 8.23% higher than ABC-SVM and 16.42% higher than PSO-SVM) and the best stability (the standard deviation of its classification accuracy was 0.82%, which was 5.54% lower than ABC-SVM, and 21.63% lower than PSO-SVM). Therefore, when compared with the ABC and PSO algorithms, the GA had more advantages in terms of feature band selection, small sample size classification, and classification accuracy[12]</p>
<p>Hasil</p>	<p>Tables 1–3 summarize the mean and standard deviation of the parameters C, σ, NI, NB, and OA of the SVM classifier that was optimized with three GI algorithms for different sample sizes (ranging from 5% to 25%, with 5% intervals). Figure 6 shows classification maps of the three hyperspectral remote sensing images when using the SVM classifier that was optimized with the three GI algorithms for a sample size of 25%. [12]</p>
<p>Kesimpulan</p>	<p>In this paper, we used three GI algorithms (GA, and the PSO and ABC algorithms) to optimize a SVM and classify three hyperspectral images of the University of Pavia, Indian Pines, and Salinas while using training samples of varying sizes. Based on the classification results, we compared the optimization performance of the three GI algorithms on the SVM in five aspects: the stability to parameter settings, convergence rate, feature selection ability, sample size, and classification accuracy. Our results show: (1) The influence of the three optimization algorithms on the C-parameter optimization of the SVM is less than that on the σ-parameter. The convergence rate, the significant difference, the number of selected features, and the accuracy of three GI algorithms are statistically significantly different (at the $p = 0.01$ level). The number of features that were selected by the ABC, GA, and PSO algorithms is 38–49%, 14–28%, and 42–52% of the original data bands, respectively. The GA has the strongest feature-selection ability, and it can compress more than 70% of the original data. In addition, the average overall accuracy of GA-SVM on three images was the highest (91.77%), followed by ABC-SVM (88.73%) and PSO-SVM (86.65%). Moreover, the classification accuracies of the three optimization algorithms for the Indian Pines datasets were significantly lower than those of the other two datasets. (2) Sample size has a significant impact on the optimization results of the three optimization algorithms. Generally speaking, the larger the sample size, the higher the average classification accuracy. For small sample sizes (e.g., 5% of the total sample size considered in this paper), from the numerical point of view, the accuracies of the three classification methods for simple research area (University of Pavia and Salinas images) are similar; however, for complex scenes (Indian Pines Image), they are very different. Of the three optimization algorithms, the sample size has the greatest impact on</p>

	the accuracy of the ABC-SVM optimization algorithm, followed by PSO-SVM and GA-SVM. In summary, the data dimension, complexity of the study area, and sample size all affect the optimization performance of the three optimization algorithms. When compared with the ABC and PSO algorithms, the GA has more advantages in terms of feature band selection, small sample size classification, and classification accuracy.[12]
Penulis	1. Xiufang Zhu 2. Nan Li 3. Yaozhong Pan
Nama jurnal, Volume, Nomor, Tahun	Remote Sens. 2019, 11, 734
Ulasan artikel	<p>Algoritma kecerdasan kelompok telah banyak digunakan dalam mesin dukungan vektor (SVM) optimasi parameter karena karakteristiknya yang jelas dari kemampuan pemrosesan paralel yang kuat, optimasi cepat, dan optimasi global. Namun, beberapa penelitian telah membuat kinerja optimasi perbandingan algoritma kecerdasan kelompok yang berbeda pada SVM, terutama dalam hal aplikasi mereka untuk klasifikasi penginderaan jauh hiperspektral. Dalam tulisan ini, kami membandingkan kinerja pengoptimalan dari tiga algoritma kecerdasan kelompok yang berbeda yang dijalankan pada SVM dalam hal lima aspek dengan menggunakan tiga gambar hiperspektral (masing-masing dari Pines India, Universitas Pavia, dan Salinas): stabilitas ke pengaturan parameter, laju konvergensi, kemampuan pemilihan fitur, ukuran sampel, dan akurasi klasifikasi. Optimalisasi segerombolan optimasi (PSO), algoritma genetika (GAS), dan algoritma koloni lebah buatan (ABC) adalah algoritma kecerdasan tiga kelompok. Hasil kami menunjukkan pengaruh ketiga optimasi ini algoritma pada optimalisasi parameter-C dari SVM kurang dari pengaruhnya terhadap parameter-σ. Tingkat konvergensi, jumlah fitur yang dipilih, dan akurasi dari kecerdasan kelompok tiga algoritma berbeda secara statistik pada tingkat $p = 0,01$. Algoritma GA bisa kompres lebih dari 70% dari data asli dan itu yang paling sedikit dipengaruhi oleh ukuran sampel. GA-SVM memiliki akurasi keseluruhan rata-rata tertinggi (91,77%), diikuti oleh ABC-SVM (88,73%), dan PSO-SVM (86,65%). Terutama, dalam adegan kompleks (misalnya, gambar Indian Pines), GA-SVM menunjukkan yang tertinggi akurasi klasifikasi (87,34%, yang 8,23% lebih tinggi dari ABC-SVM dan 16,42% lebih tinggi dari PSO-SVM) dan stabilitas terbaik (standar deviasi akurasi klasifikasi adalah 0,82%, yang 5,54% lebih rendah dari ABC-SVM, dan 21,63% lebih rendah dari PSO-SVM). Karena itu, bila dibandingkan dengan algoritma ABC dan PSO, GA memiliki lebih banyak keuntungan dalam hal pemilihan band fitur, klasifikasi ukuran sampel kecil, dan akurasi klasifikasi.</p> <p>Tabel 1- 3 merangkum mean dan standar deviasi dari parameter C, σ, NI, NB, dan OA dari classifier SVM yang dioptimalkan dengan tiga algoritma GI untuk sampel yang berbeda ukuran (mulai dari</p>

	5% hingga 25%, dengan interval 5%). Gambar 6 menunjukkan peta klasifikasi tiga gambar penginderaan jauh hiperspektral saat menggunakan classifier SVM yang dioptimalkan dengan tiga algoritma GI untuk ukuran sampel 25%
--	--

No	13 (TIGA BELAS)
Judul Artikel	A Novel MOGA-SVM Multinomial Classification for Organ Inflammation Detection[13]
Topik	Data Mining
Data	The background symptoms of each organ inflammation, appendicitis, acute appendicitis, duodenitis, and pancreatitis will firstly describe. Only a summary is provided in each topic. Readers who are interested in the details of the inflammations are suggested to refer to appendicitis [22], acute appendicitis [23], duodenitis [24], and pancreatitis [25]. Subsequently, the overview of the MOGA-SVM is briefly discussed, in which the details will be explained in the next section.[13]
Metode / Algoritma	bioinformatics; genetic algorithm; multiobjective optimization; organ inflammation; support vector machine; wrist pulse signal
Abstrak	Wrist pulse signal (WPS) contains crucial information of humans' health condition. It can serve as an alternative method for diagnosing of organ inflammation instead of traditional clinical measurement. In this paper, a novel multi-objective genetic algorithm based support vector machine (MOGA-SVM) has been proposed for the multinomial classification of the inflammations of appendix, pancreas, and duodenum. A customized similarity kernel (KCS) has been optimally designed. The performance of multinomial classification using KCS is compared with five types of kernels, linear, radial basis function (RBF), polynomial and sigmoid kernel, as well as mixtures of polynomial and RBF, to verify the effectiveness of KCS. The sensitivity, specificity and accuracy (Acc) of the proposed method are 92%, 91.2%, and 91.6% respectively. The results have demonstrated that KCS

	improves the accuracy of classification from 8.9% to 59.6%. When compared to related work, the proposed method increases the performance by more than 10%. It is believed that WPS can serve as alternative measures to diagnose organ inflammations.[13]
Hasil	In this paper, a novel MOGA-SVM has been proposed for the multinomial classification of four common organ inflammations, appendicitis, acute appendicitis, duodenitis, and pancreatitis. A customized similarity kernel KCS is optimally designed using MOGA. KCS captures the characteristics of the inflammations, which is an ideal approach in the kernel selection perspective. Typical kernel functions are generally built-in package as the analytic tool that does not aim at yielding best performance for all applications, and it is thus highly recommended that the customized kernel should be utilized for organ inflammations classification[13]
Kesimpulan	In this paper, a novel MOGA-SVM has been proposed for the multinomial classification of four common organ inflammations, appendicitis, acute appendicitis, duodenitis, and pancreatitis. A customized similarity kernel KCS is optimally designed using MOGA. KCS captures the characteristics of the inflammations, which is an ideal approach in the kernel selection perspective. Typical kernel functions are generally built-in package as the analytic tool that does not aim at yielding best performance for all applications, and it is thus highly recommended that the customized kernel should be utilized for organ inflammations classification. The results show that the proposed algorithm achieves sensitivity, specificity, and accuracy of 92%, 91.2%, and 91.6%, respectively. It achieves a significant improvement using traditional kernels and related works by 60% and 10%, respectively. It is believed that WPS can be utilized as alternative, reliable and accurate method to determine whether a candidate is suffering from organ inflammation. Besides accuracy, the proposed method is a timely and inexpensive approach. Bringing machine learning into real-world healthcare application is always a good solution to relieve the workload of medical personnel, as everybody needs regular body check and timely examination.[13]
Penulis	1. Kwok Tai Chui 2. Miltiadis D. Lytras
Nama jurnal, Volume, Nomor, Tahun	Appl. Sci. 2019, 9, 2284
Ulasan artikel	Wrist pulse signal (WPS) berisi informasi penting tentang kondisi kesehatan manusia. Bisa berfungsi sebagai metode alternatif untuk mendiagnosis peradangan organ, bukan klinis tradisional pengukuran. Dalam tulisan ini, sebuah algoritma genetika multi-objektif novel berbasis mesin vektor dukungan(MOGA-SVM) telah diusulkan untuk klasifikasi multinomial dari radang usus buntu, pankreas, dan duodenum. Kernel kemiripan khusus (KCS) telah dirancang secara optimal. Itu kinerja klasifikasi multinomial

	<p>menggunakan K CS dibandingkan dengan lima jenis kernel, linear, fungsi dasar radial (RBF), polinomial dan kernel sigmoid, serta campuran polinomial dan RBF, untuk memverifikasi efektivitas K CS. Sensitivitas, spesifisitas dan akurasi (Acc) dari yang diusulkan metode adalah 92%, 91,2%, dan 91,6% masing-masing. Hasil telah menunjukkan bahwa K CS membaik akurasi klasifikasi dari 8,9% menjadi 59,6%. Jika dibandingkan dengan pekerjaan terkait, yang diusulkan Metode meningkatkan kinerja lebih dari 10%. Diyakini bahwa WPS dapat berfungsi sebagai alternatif langkah-langkah untuk mendiagnosis radang organ. Hasil menunjukkan bahwa algoritma yang diusulkan mencapai sensitivitas, spesifisitas, dan akurasi masing-masing 92%, 91,2%, dan 91,6%. Ini mencapai peningkatan signifikan menggunakan kernel tradisional dan karya terkait masing-masing sebesar 60% dan 10%. Itu Diyakini bahwa WPS dapat digunakan sebagai metode alternatif, andal dan akurat untuk menentukan apakah seorang kandidat menderita radang organ. Selain akurasi, metode yang diusulkan juga tepat waktu dan pendekatan yang murah. Membawa pembelajaran mesin ke dalam aplikasi perawatan kesehatan dunia nyata selalu solusi yang baik untuk meringankan beban kerja tenaga medis, karena semua orang membutuhkan pemeriksaan tubuh secara teratur dan pemeriksaan tepat waktu. Dalam tulisan ini, novel MOGA-SVM telah diusulkan untuk klasifikasi multinomial empat radang organ umum, radang usus buntu, radang usus buntu akut, duodenitis, dan pankreatitis. SEBUAH kernel K CS kesamaan serupa dirancang secara optimal menggunakan MOGA. K CS menangkap karakteristik peradangan, yang merupakan pendekatan ideal dalam perspektif pemilihan kernel. Kernel yang khas fungsi umumnya paket bawaan sebagai alat analitik yang tidak bertujuan menghasilkan yang terbaik kinerja untuk semua aplikasi, dan oleh karena itu sangat disarankan agar kernel yang disesuaikan digunakan untuk klasifikasi radang organ.</p>
--	---

No	14 (EMPAT BELAS)
Judul Artikel	SVM Classification of Brain images from MRI Scans using Morphological Transformation and GLCM Texture Features[14]
Topik	Data Mining
Data	The method is classified into three main phases, which are image pre-processing, and enhancement using HTT, GLCM texture feature extraction, and image classification using support vector machine (SVM) classifier. An input MRI brain images in a collected dataset is resized into certain $M \times N$ pixels. The proposed model of brain image classification is shown in below Figure 2. Testing and Training dataset

	used as an input of the system model, and then image resizing operation has applied to both datasets.
Metode / Algoritma	MRI; classification; texture feature extraction; grey level co-occurrence matrix; support vector machine; SVM;
Abstrak	This paper introduces a novel HTT-based GLCM texture feature extraction procedure for an automatic magnetic resonance images (MRI) brain image classification. The method has three phases: 1) hierarchical transformation technique (HTT); 2) texture feature extraction; 3) classification. The new proposed HTT method incorporates optimum disk-shaped mask selection, top-hat and bottom-hat morphological operations, and some mathematical operation for both image pre-processing and enhancement. The gray level co-occurrence matrix is computed to extract statistical texture features such as contrast, correlation, energy, entropy, and homogeneity from an image. And these extracted images features of co-occurrence matrix can very well be fed into support vector machine (SVM) for further MRI brain normal and abnormal image classification. The alternate approach of the HTT-based GLCM also compared with conventional GLCM texture feature extraction method.[14]
Hasil	The MRI brain image dataset in DICOM format was collected from Tirunelveli Govt. Hospital, Tamil Nadu. The pre-processing and enhancement is required to an image in order to get a better texture feature extraction and image classification. Totally, 40 normal and 40 abnormal images are taken as image dataset. Here 20 normal and 20 abnormal images have been tested. The performance evaluation of this proposed system is analysed by the statistical measures such as sensitivity, specificity, and accuracy.[14]
Kesimpulan	The MRI brain image dataset in DICOM format was collected from Tirunelveli Govt. Hospital, Tamil Nadu. The pre-processing and enhancement is required to an image in order to get a better texture feature extraction and image classification. Totally, 40 normal and 40 abnormal images are taken as image dataset. Here 20 normal and 20 abnormal images have been tested. The performance evaluation of this proposed system is analysed by the statistical measures such as sensitivity, specificity, and accuracy.[14]
Penulis	Karuppasamy Perumal
Nama jurnal, Volume, Nomor, Tahun	Int. J. Computational Systems Engineering, Vol. 5, No. 1, 2019

Ulasan artikel

Makalah ini menjelaskan Tumor otak adalah pertumbuhan abnormal dan tidak terkendali sel-sel di otak. Magnetic resonance images (MRI) memiliki fitur yang sangat efektif untuk mendeteksi tumor otak dan identifikasi karena alasan tinggi berikut kontras jaringan lunak dan resolusi spasial yang tinggi dibandingkan dengan teknik pencitraan medis lainnya seperti CT, PET. Dan juga MRI tidak memberikan radiasi berbahaya tubuh manusia dan merupakan metode non-invasif. Meskipun MRI memberikan informasi yang efektif tentang citra otak, tidak bisa mampu mengklasifikasikan citra kanker dan otak non-kanker. Karenanya penerapan metode invasif seperti tulang belakang metode keran dan biopsi sangat menyakitkan dan proses yang memakan waktu (Bandyopadhyay, 2011).

Peningkatan gambar adalah salah satu proses penting di pemrosesan gambar digital untuk menghasilkan gambar yang lebih baik daripada gambar asli untuk gambar otomatis lebih lanjut diagnosa. ekstraksi fitur tekstur GLCM berbasis HTT untuk klasifikasi citra otak dengan magnetic resonance image (MRI) otomatis. Metode ini memiliki tiga fase: 1) teknik transformasi hirarkis (HTT); 2) ekstraksi fitur tekstur; 3) klasifikasi. Metode HTT yang diusulkan baru menggabungkan topeng berbentuk disk yang optimal seleksi, operasi top-hat dan bottom-hat morfologi, dan beberapa operasi matematika untuk pra-pemrosesan gambar dan peningkatan. Matriks co-kejadian tingkat abu-abu dihitung untuk ekstrak fitur tekstur statistik seperti kontras, korelasi, energi, entropi, dan homogenitas dari sebuah gambar. Dan gambar-gambar yang diekstraksi ini fitur matriks co-kejadian sangat bisa diumpamakan menjadi mesin vektor dukungan (SVM) untuk MRI otak lebih lanjut gambar normal dan abnormal klasifikasi. Pendekatan alternatif GLCM berbasis HTT juga dibandingkan dengan konvensional Metode ekstraksi fitur tekstur GLCM. Dataset gambar otak MRI dalam format DICOM adalah dikumpulkan dari Pemerintah Tirunelveli. Rumah Sakit, Tamil Nadu. Itupra-pemrosesan dan peningkatan diperlukan untuk gambar di untuk mendapatkan ekstraksi fitur tekstur dan gambar yang lebih baik klasifikasi. Benar-benar, 40 gambar normal dan 40 tidak normal diambil sebagai dataset gambar. Di sini 20 normal dan 20 abnormal gambar telah diuji. Evaluasi kinerja ini sistem yang diusulkan dianalisis dengan langkah-langkah statistik tersebut sebagai sensitivitas, spesifisitas, dan akurasi. Makalah ini menyajikan metode yang efisien untuk mengklasifikasikan MRI gambar otak menjadi tumor dan gambar non-tumor dengan menggunakan teknik ekstraksi fitur yang efektif. Dan yang diusulkan pekerjaan memberikan hasil yang menjanjikan dalam klasifikasi MR gambar-gambar. Menurut hasil percobaan ini, berbasis HTTGLCM memberikan akurasi 80%. Performa ini Metode penelitian juga dibandingkan dengan berbagai kernel fungsi.

No	15 (LIMA BELAS)
Judul Artikel	Feature Selection and Parameters Optimization of SVM Using Particle Swarm Optimization for Fault Classification in Power Distribution Systems[15]
Topik	Data Mining
Data	<p>Feature Extraction. For utilization of the reflectometry method, various echo responses are collected, in which some irrelevant data may be confusing to the SVM classifier and subsequently increase the training time. Feature extraction is the best effective method to select appropriate input features in order to improve the speed of training as well as to ensure the success rate of classification. For optimum feature selection in this work, PSO is employed to improve the performance of the SVM classifier. To select optimum features of the given dataset, a binary string has been optimized using PSO where each bit represents a given feature of the dataset. In the binary string, a “0” represents an ignored feature, whereas a “1” represents a selected feature of the dataset. The optimum features are those features taken from the given dataset which correspond to the optimized binary string having its bit as a “1.” For this, a given set of predefined SVM parameters has been used while the selection of features of the given dataset using PSO is made. At the end of feature selection stage, the selected strings provide the information regarding the features needed for optimizing the SVM parameters.[15]</p>
Metode / Algoritma	SVM klasifikasi
Abstrak	<p>Fast and accurate fault classification is essential to power system operations. In this paper, in order to classify electrical faults in radial distribution systems, a particle swarm optimization (PSO) based support vector machine (SVM) classifier has been proposed. The proposed PSO based SVM classifier is able to select appropriate input features and optimize SVM parameters to increase classification accuracy. Further, a time-domain reflectometry (TDR) method with a pseudorandom binary sequence (PRBS) stimulus has been used to generate a dataset for purposes of classification. The proposed technique has been tested on a typical radial distribution network to identify ten different types of faults considering 12 given input features generated by using Simulink</p>

	software and MATLAB Toolbox. The success rate of the SVM classifier is over 97%, which demonstrates the effectiveness and high efficiency of the developed method.[15]
Hasil	In this paper, the fault types are considered by using a 127-bit PRBS stimulus with frequency $f = 1$ MHz and a velocity of 198,000 km/s propagated along the sample system given in Figure 2. The dataset used in this study was obtained at the substation end by TDR analysis, with the number of features being 12, in which six features are considered to be the magnitudes of reflected signals and six remaining features are extracted from the peaks of CCR between the feedback wave and the forward wave. This dataset is comprised of 5700 samples generated by creating each type of fault at different locations on two laterals with varying fault impedance value. Note that training and test sets are randomly divided from the original dataset, in which 4500 and 1200 are used for training and testing set, respectively. Table 2 only gives a few portions of the dataset for purposes of brevity, which were created by a simulation of the ten types of short-circuit fault on the first lateral, located at distances of 3 km and 4 km from the substation.[15]
Kesimpulan	In this paper, a multilayer support vector machine (SVM) based on optimum parameters optimization and feature selection approach has been developed to classify ten types of faults in radial distribution feeders. Particle swarm optimization (PSO) has been used as an optimizer to improve the performance of SVM classifier by selecting an appropriate feature subset and kernel parameters. Further, time-domain reflectometry (TDR) with pseudorandom binary sequence (PRBS) stimulus has been utilized for generating a fault dataset. In the proposed technique, not only does using PRBS injection overcome the stimulus distortion problem, but it also surmounts the impact of noise to provide a reliable dataset for SVM classifier. The proposed PSO based SVM classifier has been successfully applied to identify all ten types of short-circuit faults in the radial distribution network observed. The achieved high accuracy rate in classifying fault types (over 97%) demonstrates greater effectiveness over existing fault identifiers.[15]
Penulis	1. Ming-Yuan Cho 2. Thi Thom Hoang
Nama jurnal, Volume, Nomor, Tahun	Hindawi Computational Intelligence and Neuroscience Volume 2017, Article ID 4135465
Ulasan artikel	Klasifikasi kesalahan yang cepat dan akurat sangat penting untuk operasi sistem tenaga. Dalam tulisan ini, untuk mengklasifikasikan

	<p>kesalahan listrik dalam sistem distribusi radial, sebuah classifier swarm optimasi (PSO) berbasis vektor mesin (SVM) classifier telah diusulkan. Pengklasifikasi SVM berbasis PSO yang diusulkan dapat memilih fitur input yang sesuai dan mengoptimalkan parameter SVM untuk meningkatkan akurasi klasifikasi. Tingkat keberhasilan classifier SVM adalah lebih dari 97%, yang menunjukkan efektivitasnya dan efisiensi tinggi dari metode yang dikembangkan.</p> <p>Dalam tulisan ini, mesin vektor dukungan multilayer (SVM) berdasarkan optimalisasi parameter dan fitur pendekatan seleksi telah dikembangkan untuk mengklasifikasikan sepuluh jenis kesalahan pada pengumpan distribusi radial. Partikel swarm optimization (PSO) telah digunakan sebagai pengoptimal untuk meningkatkan kinerja pengklasifikasi SVM dengan memilih yang sesuai subset fitur dan parameter kernel. Selanjutnya, domain waktu reflectometry (TDR) dengan urutan biner pseudorandom (PRBS) stimulus telah digunakan untuk menghasilkan kesalahan Himpunan data. Dalam teknik yang diusulkan, tidak hanya menggunakan PRBS injeksi mengatasi masalah distorsi stimulus, tetapi itu juga mengatasi dampak kebisingan untuk memberikan yang anda dataset untuk klasifikasi SVM. SVM berbasis PSO yang diusulkan classifier telah berhasil diterapkan untuk mengidentifikasi semua sepuluh jenis gangguan hubung singkat di jaringan distribusi radial diamati. Tingkat akurasi tinggi yang dicapai dalam klasifikasi jenis kesalahan (lebih dari 97%) menunjukkan efektivitas lebih besa pengidentifikasi kesalahan yang ada jenis kesalahan dipertimbangkan dengan menggunakan 127-bit stimulus PRBS dengan frekuensi = 1 MHz dan kecepatan 198.000 km / s disebarkan di sepanjang sistem sampel yang diberikan pada Gambar 2. Dataset yang digunakan dalam penelitian ini diperoleh di gardu akhir dengan analisis TDR, dengan jumlah fitur menjadi 12, di mana enam fitur dianggap besarnya sinyal yang dipantulkan dan enam fitur lainnya diekstraksi dari puncak CCR di antara umpan balik gelombang dan gelombang ke depan. Dataset ini terdiri dari 5.700 sampel yang dihasilkan dengan membuat masing-masing jenis kesalahan secara berbeda lokasi pada dua lateral dengan nilai impedansi gangguan yang bervariasi.</p>
--	--

No	16 (ENAM BELAS)
Judul Artikel	Road Surface State Recognition Based on SVM Optimization and Image Segmentation Processing[16]
Topik	Data Mining
Data	The principle of SVM [28, 29] is to find the optimal hyperplane, which ensures the accuracy of the hyperplane classification, while the distance on both sides of the hyperplane can be maximized. A

	nonlinear multiclass SVM classifier is designed for the recognition of hybrid road surface states. The nonlinear-to-linear[16]
Metode / Algoritma	SVM classification
Abstrak	Adverse road condition is the main cause of traffic accidents. Road surface condition recognition based on video image has become a central issue. However, hybrid road surface and road surface under different lighting environments are two crucial problems. In this paper, the road surface states are categorized into 5 types including dry, wet, snow, ice, and water. Then, according to the original image size, images are segmented; 9-dimensional color eigenvectors and 4 texture eigenvectors are extracted to construct road surface state characteristics database. Next, a recognition method of road surface state based on SVM (Support Vector Machine) is proposed. In order to improve the recognition accuracy and the universality, a grid searching algorithm and PSO (Particle Swarm Optimization) algorithm are used to optimize the kernel function factor and penalty factor of SVM. Finally, a large number of actual road surface images in different environments are tested. The results show that the method based on SVM and image segmentation is feasible. The accuracy of PSO algorithm is more than 90%, which effectively solves the problem of road surface state recognition under the condition of hybrid or different video scenes.[16]
Hasil	The test results show that (1) the establishment of a perfect sample database is the basis for accurate recognition of road surface state. The quality and purity of the sample database can be ensured by dealing with single state image blocks. (2) Each feature value of the five states has overlapping parts, while 13-dimensional eigenvectors can satisfy the need of state recognition accurately. (3) After the SVM parameter optimization, the performance of road state classification model is superior, in which the performance of the PSO algorithm is better than that of the grid searching optimization algorithm, and the accuracy of state recognition is improved. (4) Image segmentation method can be used to obtain the distribution of road surface state, which solves the problem of hybrid road surface state and road surface under different[16]
Kesimpulan	There are a large number of traffic accidents caused by bad

	<p>weather condition or slippery road condition. Therefore, road states greatly affect the traffic safety and transport efficiency on highway. It is of great social significance to study the classification of wet and slippery road condition, which can provide reference and theoretical basis for traffic control and meteorological management and ensure traffic safety. There are many limitations in using instrument to recognize road surface conditions, and image recognition is becoming the main technology for recognizing road surface state. However, recognition under hybrid road conditions and different lighting conditions are two problems that need to be solved. Based on SVM algorithm and image segmentation processing technology, we propose a method of video image processing technology for road surface state recognition.[16]</p>
<p>Penulis</p>	<p>1. Jiandong Zhao, 2. Hongqiang Wu, 3. Liangliang Chen</p>
<p>Nama jurnal, Volume, Nomor, Tahun</p>	<p>Journal of Advanced Transportation Volume 2017, Article ID 6458495, 21 pages</p>
<p>Ulasan artikel</p>	<p>Kondisi jalan yang buruk adalah penyebab utama kecelakaan lalu lintas. Pengenalan kondisi permukaan jalan berdasarkan gambar video telah menjadi masalah sentral. Namun, permukaan jalan hybrid dan permukaan jalan di bawah lingkungan pencahayaan yang berbeda adalah dua masalah penting. Di dalam kertas, kondisi permukaan jalan dikategorikan ke dalam 5 jenis termasuk kering, basah, salju, es, dan air. Lalu, sesuai dengan aslinya ukuran gambar, gambar tersegmentasi; Vektor eigen warna 9-dimensi dan 4 vektor eigen tekstur diekstraksi untuk membangun jalan database karakteristik keadaan permukaan. Selanjutnya, metode pengenalan keadaan permukaan jalan berdasarkan SVM (Support Vector Machine) adalah diusulkan. Untuk meningkatkan akurasi pengenalan dan universalitas, algoritma pencarian grid dan PSO (Particle Swarm Algoritma Optimasi) digunakan untuk mengoptimalkan faktor fungsi kernel dan faktor penalti SVM. Akhirnya, sejumlah besar aktual gambar permukaan jalan di lingkungan yang berbeda diuji. Hasil penelitian menunjukkan bahwa metode berdasarkan SVM dan segmentasi gambar layak. Keakuratan algoritma PSO lebih dari 90%, yang secara efektif menyelesaikan masalah pengenalan kondisi permukaan jalan dalam kondisi adegan video hybrid atau berbeda. Hasil tes menunjukkan bahwa (1) pembentukan sempurna database sampel adalah dasar untuk pengenalan jalan yang akurat kondisi permukaan. Kualitas dan kemurnian basis data sampel dapat dipastikan dengan berurusan dengan blok gambar keadaan tunggal. (2) Setiap nilai fitur dari lima negara bagian memiliki tumpang tindih, sementara vektor eigen 13 dimensi dapat memenuhi kebutuhan pengakuan negara secara akurat. (3) Setelah parameter SVM optimasi, kinerja klasifikasi keadaan jalan model lebih unggul, di mana kinerja PSO juga rithm</p>

	<p>lebih baik dari pada optimasi pencarian grid algoritma, dan akurasi pengakuan negara ditingkatkan. (4) Metode segmentasi gambar dapat digunakan untuk mendapatkan distribusi keadaan permukaan jalan, yang memecahkan masalah keadaan permukaan jalan hybrid dan permukaan jalan di bawah berbeda.</p> <p>Ada sejumlah besar kecelakaan lalu lintas yang disebabkan oleh buruk kondisi cuaca atau kondisi jalan yang licin. Karena itu, jalan menyatakan sangat mempengaruhi keselamatan lalu lintas dan efisiensi transportasi di jalan raya. Sangat penting secara sosial untuk mempelajari</p>
--	--

No	17 (TUJUH BELAS)
Judul Artikel	Automatic Detection of Hard Exudates in Color Retinal Images Using Dynamic Threshold and SVM Classification: Algorithm Development and Evaluation [17]
Topik	Data Mining
Data	lists the overall evaluation performance of our proposed algorithm using image-level evaluation in the DIARETDB1 database. The overall mean sensitivity, specificity, and accuracy were 97.5%, 97.8%, and 97.7%, respectively, which compared well with other published results. Some example images from DIARETDB1 database are shown in Figure 12 to demonstrate whether an image has been correctly or wrongly detected with exudates.[17]
Metode / Algoritma	SVM classification
Abstrak	Diabetic retinopathy (DR) is one of the most common causes of visual impairment. Automatic detection of hard exudates (HE) from retinal photographs is an important step for detection of DR. However, most of existing algorithms for HE detection are complex and inefficient. We have developed and evaluated an automatic retinal image processing algorithm for HE detection using dynamic threshold and fuzzy C-means clustering (FCM) followed by support vector machine (SVM) for classification. The proposed algorithm consisted of four main stages: (i) imaging preprocessing; (ii) localization of optic disc (OD); (iii) determination of candidate HE using dynamic threshold in combination with global threshold based on FCM; and (iv) extraction of eight texture features from the candidate HE region, which were then fed into an SVM classifier for automatic HE classification. The proposed algorithm was trained and cross-validated (10 fold) on a publicly available e-ophtha EX database (47 images) on

	<p>pixel level, achieving the overall average sensitivity, PPV, and F-score of 76.5%, 82.7%, and 76.7%. It was tested on another independent DIARETDB1 database (89 images) with the overall average sensitivity, specificity, and accuracy of 97.5%, 97.8%, and 97.7%, respectively. In summary, the satisfactory evaluation results on both retinal imaging databases demonstrated the effectiveness of our proposed algorithm for automatic HE detection, by using dynamic threshold and FCM followed by an SVM for classification.</p>
Hasil	<p>Statistical analysis showed that there was no significant difference between the five repeat measurements for the evaluation parameters (all $p > 0.8$). As shown in Figure 10(a), the overall mean and SD of sensitivity, PPV, and F-score across all the images e-ophtha EX database were $76.5\% \pm 15.1\%$, $82.6\% \pm 16.7\%$, and $76.7\% \pm 12.7\%$. The measurement repeatability (SD of the five measurements) of sensitivity, PPV, and F-score for each individual image is shown in Figure 10(b). It ranged from 0.3%~16%, indicating that our algorithm proposed in this study for HE detection is sufficiently stable.[17]</p>
Kesimpulan	<p>We have developed and evaluated an automatic retinal image processing algorithm to detect HEs using dynamic threshold, FCM and SVM. The color retinal images were segmented using dynamic threshold in combination with the global threshold, and the segmented regions were classified into two disjoint classes (exudates and nonexudates pixels) using SVM. The algorithm was tested on two publicly available databases (DIARETDB1 and e-ophtha EX database), and the evaluation results quantitatively demonstrated that our proposed algorithm is reliable in terms of repeatability and also achieved high accuracy for HE detection.[17]</p>
Penulis	<p>Shengchun Long , 1 Xiaoxiao Huang , 1 Zhiqing Chen,2 Shahina Pardhan , 3 and Dingchang Zheng 4</p>
Nama jurnal, Volume, Nomor, Tahun	<p>Hindawi BioMed Research International Volume 2019, Article ID 3926930</p>
Ulasan artikel	<p>Retinopati Diabetik (DR) adalah salah satu penyebab gangguan penglihatan yang paling umum. Deteksi otomatis eksudat keras (HE) dari foto retina merupakan langkah penting untuk mendeteksi DR. Namun, sebagian besar algoritma yang ada untuk deteksi HE adalah kompleks dan tidak efisien. Kami telah mengembangkan dan mengevaluasi algoritma pemrosesan gambar retina otomatis untuk deteksi HE menggunakan ambang dinamis dan fuzzy C-</p>

	<p>means clustering (FCM) diikuti oleh mesin vektor dukungan (SVM) untuk klasifikasi. Itu algoritma yang diusulkan terdiri dari empat tahap utama: (i) preprocessing pencitraan; (ii) lokalisasi cakram optik (OD); (iii) tekad kandidat HE menggunakan ambang dinamis dalam kombinasi dengan ambang global berdasarkan FCM; dan (iv) ekstraksi delapan fitur tekstur dari kandidat HE region, yang kemudian dimasukkan ke dalam classifier SVM untuk klasifikasi HE otomatis. Itu algoritma yang diusulkan dilatih dan divalidasi silang (10 kali lipat) pada basis data e-ophta EX yang tersedia untuk umum (47 gambar) pada piksel level, mencapai sensitivitas rata-rata keseluruhan, PPV, dan F-skor 76,5 %, 82,7 %, dan 76,7 %. Itu diuji pada independen lain Database DIARETDB1 (89 gambar) dengan sensitivitas rata-rata keseluruhan, spesifisitas, dan akurasi 97,5 %, 97,8 %, dan 97,7 %, masing-masing. Singkatnya, hasil evaluasi yang memuaskan pada kedua database pencitraan retina menunjukkan efektivitas algoritma yang kami usulkan untuk deteksi HE otomatis, dengan menggunakan ambang dinamis dan FCM diikuti oleh SVM untuk klasifikasi. Kami telah mengembangkan dan mengevaluasi gambar retina otomatis algoritma pemrosesan untuk mendeteksi HE menggunakan ambang dinamis, FCM dan SVM. Gambar retina warna tersegmentasi menggunakan ambang batas dinamis dalam kombinasi dengan global ambang batas, dan daerah tersegmentasi diklasifikasikan ke dalam dua kelas terpisah (eksudat dan tidak ada piksel) menggunakan SVM. Algoritma diuji pada dua yang tersedia untuk umum basis data (DIARETDB1 dan basis data e-ophta EX), dan hasil evaluasi menunjukkan bahwa kami secara kuantitatif algoritma yang diusulkan dapat diandalkan dalam hal pengulangan dan juga mencapai akurasi tinggi untuk deteksi HE</p>
--	--

No	18 (DELAPAN BELAS)
Judul Artikel	Diagnostic Method of Diabetes Based on Support Vector Machine and Tongue Images[18]
Topik	Data Mining
Data	We established three GA-SVM classifiers on different datasets which are raw data, normalized data, and normalized data after PCA, respectively. The result shown in Table 2 demonstrates that the classifier on normalize data after PCA yields a better accuracy than other two datasets, which is 1.89% higher than that of raw data at 79.72%. A receiver operating characteristic (ROC) curve is a graphical plot that illustrates the performance of a binary classifiers system. The curve is created by plotting the true[18]
Metode / Algoritma	SVM classification

<p>Abstrak</p>	<p>Objective. The purpose of this research is to develop a diagnostic method of diabetes based on standardized tongue image using support vector machine (SVM). Methods. Tongue images of 296 diabetic subjects and 531 nondiabetic subjects were collected by the TDA-1 digital tongue instrument. Tongue body and tongue coating were separated by the division-merging method and chrominance-threshold method. With extracted color and texture features of the tongue image as input variables, the diagnostic model of diabetes with SVM was trained. After optimizing the combination of SVM kernel parameters and input variables, the influences of the combinations on the model were analyzed. Results. After normalizing parameters of tongue images, the accuracy rate of diabetes predication was increased from 77.83% to 78.77%. The accuracy rate and area under curve (AUC) were not reduced after reducing the dimensions of tongue features with principal component analysis (PCA), while substantially saving the training time. During the training for selecting SVM parameters by genetic algorithm (GA), the accuracy rate of cross-validation was grown from 72% or so to 83.06%. Finally, we compare with several state-of-the-art algorithms, and experimental results show that our algorithm has the best predictive accuracy. Conclusions. The diagnostic method of diabetes on the basis of tongue images in Traditional Chinese Medicine (TCM) is of great value, indicating the feasibility of digitalized tongue diagnosis.[18]</p>
<p>Hasil</p>	<p>In SMOTE, by confirming the frequency of sampling, the samples of both groups were equalized. There were 23 input parameters, which include personal information (gender, age, and BIM) and parameters of tongue color[18]</p>
<p>Kesimpulan</p>	<p>In this paper, with tongue images, SVM was used to establish the classification model for diabetes, which achieves good classification results. It indicates the feasibility of using the information science method to carry out TCM diagnosis. Data preprocessing and parameter optimization directly impact the results. Feature dimension reduction is a double-edged sword. On the one hand, it can accelerate the training speed and avoid overfitting; on the other hand, it may cause the loss of useful information. GA can find the optimal option without going through the whole search space and can also be used for feature selection in other studies. With information collecting and analyzing techniques,</p>

	this interdisciplinary study researches on the informatization of TCM and its application and provides a reference for designing more effective data analysis and processing algorithms. In future researches, other pieces of TCM diagnostic [18]
Penulis	1. Jianfeng Zhang,1 2. Jiatio Xu,1 3. Xiaojuan Hu,2 Qingguang Chen,3 Liping Tu,2 Jingbin Huang,1 and Ji Cui1
Nama jurnal, Volume, Nomor, Tahun	BioMed Research International Volume 2017, ID Artikel 7961494, 9 halaman
Ulasan artikel	<p>Tujuan dari penelitian ini adalah untuk mengembangkan metode diagnostik diabetes berdasarkan gambar lidah standar menggunakan mendukung mesin vektor (SVM). Metode Gambar lidah dari 296 subyek diabetes dan 531 subyek nondiabetes dikumpulkan oleh instrumen lidah digital TDA-1. Lapisan lidah dan lidah dipisahkan dengan metode penggabungan divisi dan metode ambang batas chrominance. Dengan fitur warna dan tekstur yang diekstraksi dari gambar lidah sebagai variabel input, diagnostik model diabetes dengan SVM dilatih. Setelah mengoptimalkan kombinasi parameter kernel SVM dan variabel input, the pengaruh kombinasi pada model dianalisis. Hasil. Setelah menormalkan parameter gambar lidah, ketepatan tingkat prediksi diabetes meningkat dari 77,83% menjadi 78,77%. Tingkat akurasi dan area di bawah kurva (AUC) tidak berkurang setelah mengurangi dimensi fitur lidah dengan analisis komponen utama (PCA), sekaligus menghemat pelatihan waktu. Selama pelatihan untuk memilih parameter SVM dengan algoritma genetika (GA), tingkat akurasi cross-validation adalah tumbuh dari 72% atau lebih menjadi 83,06%. Akhirnya, kami membandingkan dengan beberapa algoritma canggih, dan hasil eksperimen menunjukkan bahwa algoritma kami memiliki akurasi prediksi terbaik. Kesimpulan. Metode diagnostik diabetes berdasarkan gambar lidah dalam Pengobatan Tradisional Cina (TCM) sangat bernilai, menunjukkan kelayakan diagnosis lidah digital. Selama 3000 tahun terakhir, diagnosis lidah telah terbukti menjadi salah satu yang paling berharga dan paling banyak diterapkan Pendekatan diagnostik TCM dalam praktik klinis. Warna, kelembaban, ukuran, bentuk, dan tekstur lidah mengungkapkan keseluruhan kondisi kesehatan dan disfungsi organ tertentu. Lidah warna dan pelapisan telah lama menjadi parameter kunci dalam berbagai penyakit tiating. Dalam penelitian ini, kami mengambil foto lidah dengan instrumen lidah TDA-1, yang mensegmentasi tubuh dan lapisan lidah. Setelah mendapatkan parameter warna RGB, HIS, dan LAB dan parameter tekstur CON, ASM, THT, dan MEAN, dengan data ini, model diagnosis diabetes didirikan atas dasar SVM. Dalam tulisan ini, dengan gambar lidah, SVM digunakan untuk membangun model klasifikasi untuk diabetes, yang mencapai baik hasil klasifikasi. Ini</p>

	<p>menunjukkan kelayakan menggunakan metode ilmu informasi untuk melaksanakan diagnosis TCM. Preprocessing data dan optimalisasi parameter secara langsung berdampak pada hasil. Pengurangan dimensi fitur adalah dua pedang bermata. Di satu sisi, itu bisa mempercepat pelatihan mempercepat dan menghindari overfitting; di sisi lain, itu dapat menyebabkan hilangnya informasi yang bermanfaat. GA dapat menemukan opsi optimal tanpa melalui seluruh ruang pencarian dan juga bisa digunakan untuk pemilihan fitur dalam penelitian lain. Dengan teknik pengumpulan dan analisis informasi, studi interdisipliner ini meneliti tentang informatisasi TCM dan aplikasinya dan menyediakan referensi untuk merancang analisis dan pemrosesan data yang lebih efektif dan efisien.</p>
--	---

No	19 (SEMBILAN BELAS)
Judul Artikel	Author Identification using SVM and Naive Bayes Techniques [19]
Topik	Data Mining
Data	<p>dataset of 50 author's will be using for training and testing. For each author, 50 text documents written by him/her will be used to obtain good results on a different classifier. Initially, data is processed using Preprocessing techniques. Firstly, removal the special symbols such as punctuation marks and then removal the stop words such as "a", "the", "and" etc will be done and lastly stemming will be applied to reduce the word to its root form. After preprocessing of the text, it is given to the SVM and Naive Bayes classifier for author identification. [19]</p>
Metode / Algoritma	Feature Extraction, Support Vector Machine Algorithm, Nave Bayes classifier, Author Categorization, Author Identification
Abstrak	<p>:With increasing use of social media, cybercrime cases are happening rapidly. Social crises may occur due to wrong messages/posts. Identities of wrong messages/post are hidden by sender. An approach to intelligent author categorization has been proposed using a Naive Bayes and SVM classification algorithm. The categorization is based on not only the body but also the header of a text or article. The metadata provide additional information that can be exploited and improve the categorization capability. In particular, categorization based only on the header information is comparable or superior to that based on all</p>

	the information in a text or message. SVM works on features and we will work on new features to identify author where as Naive Bayes is used for classification. [19]
Hasil	Support Vector Machines is classification technique that analyzes data. SVM solves classification problem in less time. It uses a flexible representation of the class boundaries. It can also solve a variety of problems with very less or many parameters. It can separate a set of samples possessing different classes. This technique is used for feature extraction. Extract features from author written text for calculate uniqueness for author identification.[19]
Kesimpulan	An approach to intelligent author categorization has been proposed using a Naive Bayes and SVM classification algorithm. According to the input data the accuracy may be calculated by both the algorithm. The SVM algorithm may gives better accuracy for short text, where as Naive Bayes works better for long text. In our proposed system, both the algorithm work in parallel manner and whose accuracy is better may given as a output. An approach to intelligent author categorization has been proposed using a Naive Bayes and SVM classification algorithm. According to the input data the accuracy may be calculated by both the algorithm. The SVM algorithm may gives better accuracy for short text, where as Naive Bayes works better for long text. In our proposed system, both the algorithm work in parallel manner and whose accuracy is better may given as a output. Hence the system. [19]
Penulis	1. Tejaswi Pisal 2. Shraddha Shah 3. Aarti Nagawade 4. Rutuja Kakade 5. Prof. Anita Gunjal
Nama jurnal, Volume, Nomor, Tahun	© 2020 IJRAR March 2020, Volume 7, Issue 1 (E-ISSN 2348-1269, P- ISSN 2349-5138)
Ulasan artikel	Dengan pertumbuhan Internet yang cepat dan perluasan penggunaannya,Internet menjadi platform yang ideal untuk kegiatan kriminal yang terutama mencakup melakukan penipuan, mencuri identitas, atau melanggar privasi dll. Dengan meningkatnya penggunaan penggunaan media sosial,kejahatan dunia maya sering terjadi. Pengirim dapat menyembunyikan kebenarannya identitas dan melakukan kejahatan. Jenis pesan ini menyebar informasi yang salah di masyarakat. Ini menyebabkan beberapa konflik sosial. Didalam beberapa kasus, sulit untuk mengetahui pengirim informasi itu atau lacak pengirimnya. Masalah utama adalah bagaimana mengidentifikasi pengirim detail. Untuk

	<p>mengatasi masalah ini kami mengusulkan sistem yang bisamembantu mengidentifikasi penulis. Identifikasi penulis adalah bidang penelitian yang muncul dari meningkatnya penggunaan internet. Ini juga digunakan untuk menentukan penulis mana yang menulis bab atau bagian dari sebuah buku, the Alkitab menjadi contoh paling terkenal. Identifikasi penulis Penelitian memanfaatkan struktur teks dan kata-kata itu digunakan Dengan meningkatnya penggunaan media sosial, kasus cyber crime terjadi dengan cepat. Krisis sosial dapat terjadi karena kesalahan pesan / posting. Identitas pesan / posting yang salah disembunyikan oleh pengirim. Sebuah pendekatan untuk kategorisasi penulis cerdas telahtelah diusulkan menggunakan klasifikasi Naive Bayes dan SVM algoritma. Kategorisasi ini tidak hanya didasarkan pada badan tetapi jugajuga tajuk teks atau artikel. Meta data menyediakan informasi tambahan yang dapat dieksploitasi dan meningkatkan kemampuan kategorisasi. Secara khusus, berdasarkan kategorisasihanya informasi tajuk yang sebanding atau lebih unggul dariyang didasarkan pada semua informasi dalam teks atau pesan. SVM bekerja pada fitur dan kami akan bekerja pada fitur baru untuk mengidentifikasi penulis dimana Naif Bayes digunakan untuk klasifikasi. Pendekatan untuk kategorisasi penulis cerdas telah dilakukandiusulkan menggunakan algoritma Naive Bayes dan klasifikasi SVM. Menurut data input akurasi dapat dihitung oleh keduanya algoritma. Algoritma SVM dapat memberikan akurasi yang lebih baik untuk teks pendek, di mana Naive Bayes berfungsi lebih baik untuk teks panjang. Di kamisistem yang diusulkan, baik algoritma bekerja secara paralel dan Akurasi yang lebih baik dapat diberikan sebagai output. Karena itu sistemuntuk data teks nyata dikategorikan ke dalam nama penulis. Pendekatan untuk kategorisasi penulis cerdas telah dilakukan diusulkan menggunakan algoritma Naive Bayes dan klasifikasi SVM. Menurut data input akurasi dapat dihitung oleh keduanya algoritma. Algoritma SVM dapat memberikan akurasi yang lebih baik untukteks pendek, di mana Naive Bayes berfungsi lebih baik untuk teks panjang. Di kami sistem yang diusulkan, baik algoritma bekerja secara paralel dan Akurasi yang lebih baik dapat diberikan sebagai output. Karena itu sistem untuk data teks nyata dikategorikan ke dalam nama penulis.</p>
--	---

No	20 (DUA PULUH)
Judul Artikel	Phishing Websites Classification using Hybrid SVM and KNN Approach[20]
Topik	Data Mining
Data	In our study, we used a dataset prepared by Abdelhamid et Al The dataset contains more than 1353 samples collected from different sources, each sample record consists of nine different features plus the class which is Phishing, Legitimate or Suspicious website. The used features in the dataset are explained in Table 1.[20]
Metode / Algoritma	Information security; phishing websites; support vector machine; K-nearest neighbors
Abstrak	Phishing is a potential web threat that includes mimicking official websites to trick users by stealing their important information such as username and password related to financial systems. The attackers use social engineering techniques like email, SMS and malware to fraud the users. Due to the potential financial losses caused by phishing, it is essential to find effective approaches for phishing websites detection. This paper proposes a hybrid approach for classifying the websites as Phishing, Legitimate or Suspicious websites, the proposed approach intelligently combines the K-nearest neighbors (KNN) algorithm with the Support Vector Machine (SVM) algorithm in two stages. Firstly, the KNN was utilized as a robust to noisy data and effective classifier. Secondly, the SVM is employed as a powerful classifier. The proposed approach integrates the simplicity of KNN with the effectiveness of SVM. experimental results show that the proposed hybrid approach achieved the highest accuracy of 90.04% when compared with other approaches.[20]
Hasil	Diisi dengan Hasil yang dicapai dalam penelitian tersebut
Kesimpulan	Detection of Phishing websites is an active research area due to its significant importance for both individuals and organizations, because phishing websites can cause potential financial losses. Artificial Intelligence techniques have been used successfully in many fields and it offer potential possibility to classify the fishing websites. This paper proposed a hybrid approach for classifying the websites as Phishing, Legitimate or Suspicious, the proposed approach combines the K-nearest neighbors (KNN) algorithm with the support vector machine algorithm (SVM). The proposed

	<p>approach integrates the effectiveness and simplicity of KNN with the powerful of SVM. Thus, the proposed hybrid KNN-SVM gains the advantages of combining KNN with SVM and avoids their own drawbacks when they used separately. The experimental results show that the proposed hybrid approach achieved an accuracy of 90.04%. For the future, we will consider more advanced data mining techniques for the classification of the phishing websites..[20]</p>
Penulis	King Abdulaziz
Nama jurnal, Volume, Nomor, Tahun	International Journal of Advanced Computer Science and Applications, Vol. 8, No. 6, 2017
Ulasan artikel	<p>Phishing adalah ancaman serius yang berpotensi berbahaya pengguna internet. Phishing adalah semacam serangan semantik dan serangan menargetkan pencapaian sosial atau finansial. Diserang phishing, penyerang berusaha menipu dan mengambil uang dari pengguna internet dengan mengirimkannya e-mail sebagai gantinya menggunakan perangkat lunak malware. Pertama situs web palsu yang terlihat seperti situs web yang sah dibuat oleh penyerang. Lalu pengguna diminta untuk mengakses situs web palsu dan penyerang mengambil uang mereka dan informasi penting. Serangan phishing menjadi maju terus-menerus karena penyerang menemukan inovasi metode dan menyesuaikan kebijakan mereka akibatnya. Yang paling metode umum untuk phishing adalah email. Email phishing memanfaatkan berbagai strategi untuk menipu pengguna internet menulis informasi pribadi mereka seperti nomor akun, kata sandi dan nama pengguna. Phishing adalah ancaman web potensial yang mencakup meniru situs web resmi untuk menipu pengguna dengan mencuri situs mereka informasi penting seperti nama pengguna dan kata sandi yang terkait dengan sistem keuangan. Para penyerang menggunakan teknik rekayasa sosial seperti email, SMS, dan malware untuk menipu pengguna. Karena potensi kerugian finansial yang disebabkan oleh phishing, penting untuk ditemukan pendekatan yang efektif untuk deteksi situs web phishing. Kertas ini mengusulkan pendekatan hybrid untuk mengklasifikasikan situs web sebagai Situs web phishing, Sah atau Mencurigakan, yang diusulkan pendekatan cerdas menggabungkan tetangga K-terdekat (KNN) algoritma dengan algoritma Support Vector Machine (SVM) di dua tahap. Pertama, KNN digunakan sebagai data yang kuat dan berisik dan penggolong efektif. Kedua, SVM digunakan sebagai penggolong yang kuat. Pendekatan yang diusulkan mengintegrasikan kesederhanaan KNN dengan efektivitas SVM. Itu Hasil eksperimen menunjukkan bahwa pendekatan hybrid yang diusulkan mencapai akurasi tertinggi 90,04% bila dibandingkan dengan pendekatan lain. Deteksi situs web Phishing adalah area penelitian aktif karena kepentingannya yang signifikan bagi individu dan organisasi, karena situs web phishing dapat menyebabkan potensi kerugian finansial. Teknik Kecerdasan</p>

	<p>Buatan telah berhasil digunakan di banyak bidang dan menawarkan potensi kemungkinan untuk mengklasifikasikan situs web memancing. Kertas ini mengusulkan pendekatan hybrid untuk mengklasifikasikan situs web sebagai Phishing, Sah atau Mencurigakan, pendekatan yang diusulkan menggabungkan algoritma K - tetangga terdekat (KNN) dengan mendukung algoritma mesin vektor (SVM). Yang diusulkan pendekatan mengintegrasikan efektivitas dan kesederhanaan KNN dengan kekuatan SVM. Dengan demikian, hibrida KNN- yang diusulkan SVM mendapatkan keuntungan dari menggabungkan KNN dengan SVM dan menghindari kelemahan mereka sendiri saat digunakan secara terpisah. Itu Hasil eksperimen menunjukkan bahwa pendekatan hybrid yang diusulkan mencapai akurasi 90,04%. Untuk masa depan, kita akan melakukannya mempertimbangkan teknik penambangan data yang lebih maju untuk klasifikasi situs web phishing.</p>
--	--

Tabel ini terdiri dari minimal 20 Jurnal

IV. ULASAN

Pada sebuah Konsep Klasifikasi dengan Support Vector Machine(SVM) adalah mencari hyperplane terbaik yang berfungsi sebagai pemisah dua kelas data. Ide sederhana dari SVM adalah memaksimalkan margin, yang merupakan jarak pemisah antara kelas data, disini saya akan membandingkan sebuah suporter distadion sepak bola dengan followers instagram sebuah klub tersebut. Sebuah klub sepak bola sangat bergantung pada sebuah suporter sehingga hubungan klub dan suporter harus terjalin dengan baik. Pendukung klub sepak bola sendiri cukup sering memberikan argumen terhadap sebuah klub sepak bola melalui media sosial Instagram. Oleh karena itu, saya mengusulkan penelitian untuk membangun sistem analisis sentimen terhadap opini performa klub sepak bola pada dokumen instagram. Penelitian ini menggunakan metode Support Vector Machine dan Naive bayes lalu mencocokkan data followers instagram dengan suporter yang datang pada sebuah pertandingan. Tahapan yang dilakukan dimulai dengan melakukan survey pada data followers, kemudian melakukan banding, karena tidak semua suporter menggunakan sosial media begitu pula sebaliknya, tidak semua followers di sosial media akan mendatangi stadion sepak bola.

V. DAFTAR PUSTAKA

- [1] X. Ma, X. Tong, S. Liu, X. Luo, H. Xie, and C. Li, "Optimized sample selection in SVM classification by combining with DMSP-OLS, landsat NDVI and GlobeLand30 products for extracting urban built-up areas," *Remote Sensing*, vol. 9, no. 3. 2017.
- [2] F. Jaramillo, M. Orchard, C. Muñoz, C. Antileo, D. Sáez, and P. Espinoza, "On-line

- estimation of the aerobic phase length for partial nitrification processes in SBR based on features extraction and SVM classification,” *Chem. Eng. J.*, vol. 331, no. July 2017, pp. 114–123, 2018.
- [3] N. B. Bahadure, A. K. Ray, and H. P. Thethi, “Image Analysis for MRI Based Brain Tumor Detection and Feature Extraction Using Biologically Inspired BWT and SVM,” *Int. J. Biomed. Imaging*, vol. 2017, 2017.
- [4] M. Naeem Ayyaz, I. Javed, and W. Mahmood, “Handwritten Character Recognition Using Multiclass SVM Classification with Hybrid Feature Extraction,” *J. Engg. Appl. Sci.*, vol. 10, pp. 57–67, 2012.
- [5] F. Wang, Z. Zhen, B. Wang, and Z. Mi, “Comparative study on KNN and SVM based weather classification models for day ahead short term solar PV power forecasting,” *Applied Sciences (Switzerland)*, vol. 8, no. 1. 2017.
- [6] Y. Wang, W. Yu, and Z. Fang, “Multiple Kernel-Based SVM Classification of Hyperspectral Images by Combining Spectral, Spatial, and Semantic Information,” *Remote Sensing*, vol. 12, no. 1. p. 120, 2020.
- [7] S. Bashiri, A. Akbarzadeh, M. Zarrabi, K. Yetilmezsoy, M. Fingas, and M. Moosakhaani, “Using PCA combined SVM in the classification of eutrophication in DEZ reservoir (Iran),” *Environ. Eng. Manag. J.*, vol. 16, no. 9, pp. 2139–2146, 2017.
- [8] R. C. Patil, “CLASSIFICATION OF H & E STAINED ORAL CANCER IMAGES USING STATISTICAL AND,” vol. 5, no. 4, pp. 310–313, 2018.
- [9] S. Jiang, M. Lian, C. Lu, S. Ruan, Z. Wang, and B. Chen, “SVM-DS fusion based soft fault detection and diagnosis in solar water heaters,” *Energy Explor. Exploit.*, vol. 37, no. 3, pp. 1125–1146, 2019.
- [10] L. J. Devi and J. L. Mazher Iqbal, “Efficient technique to estimate age using PCA & multi SVM classification,” *Int. J. Eng. Technol.*, vol. 7, no. 1.2, pp. 81–84, 2018.
- [11] Q. Li, Y. Gu, and J. Jia, “Classification of multiple chinese liquors by means of a QCM-based e-nose and MDS-SVM classifier,” *Sensors (Switzerland)*, vol. 17, no. 2, 2017.
- [12] X. Zhu, N. Li, and Y. Pan, “Optimization performance comparison of three different group intelligence algorithms on a SVM for hyperspectral imagery classification,” *Remote Sensing*, vol. 11, no. 6. 2019.
- [13] K. T. Chui and M. D. Lytras, “A novel MOGA-SVM multinomial classification for organ inflammation detection,” *Appl. Sci.*, vol. 9, no. 11, 2019.

- [14] U. Ramasamy and P. K., “SVM Classification of Brain images from MRI Scans using Morphological Transformation and GLCM Texture Features,” *Int. J. Comput. Syst. Eng.*, vol. 5, no. 1, p. 1, 2018.
- [15] M. Y. Cho and T. T. Hoang, “Feature Selection and Parameters Optimization of SVM Using Particle Swarm Optimization for Fault Classification in Power Distribution Systems,” *Comput. Intell. Neurosci.*, vol. 2017, 2017.
- [16] J. Zhao, H. Wu, and L. Chen, “Road Surface State Recognition Based on SVM Optimization and Image Segmentation Processing,” *J. Adv. Transp.*, vol. 2017, 2017.
- [17] S. Long, X. Huang, Z. Chen, S. Pardhan, D. Zheng, and F. Scalzo, “Automatic detection of hard exudates in color retinal images using dynamic threshold and SVM classification: Algorithm development and evaluation,” *Biomed Res. Int.*, vol. 2019, 2019.
- [18] J. Zhang *et al.*, “Diagnostic Method of Diabetes Based on Support Vector Machine and Tongue Images,” *Biomed Res. Int.*, vol. 2017, 2017.
- [19] P. A. Gunjal, “Author Identification using SVM and Naive Bayes Techniques,” vol. 7, no. 1, pp. 1–3, 2020.
- [20] A. Altaher, “Phishing Websites Classification using Hybrid SVM and KNN Approach,” *Int. J. Adv. Comput. Sci. Appl.*, vol. 8, no. 6, pp. 90–95, 2017.

CURRICULUM VITAE



Pas Foto

Name : Sandesta Prima Aksah
Place and date of birth : Tegal, 24 Juli 1998
Sex : Laki-laki
Nationality : Indonesia
Marital Status : Belum Menikah
ID Number : 3173012407980004
Pasport Number : -
Email : sandesta12@gmail.com

Religion : Islam
Address : Jl. Al-barokah III No. 63 Rt 015/001, duri kosambi
 Cengkareng, Jakarta Barat
Phone Number/Mobile : 08561502160

EDUCATION

Elementary School : SDN Duri Kosambi 02 PG
Secondary School : Mts. Annida Al-Islamy
Senior High School : SMK Yadika 3
University : Universitas Mercu Buana
Degree Awarded : Sarjana Komputer
Faculty : Fakultas Ilmu Komputer
Title of thesis : Komprehensif
GPA : -

SKILLS

Language : Inggris **Score Toefl** : -

ORGANIZATION EXPERIENCE

No. of Years	Title	Name of Organization
2016-2019	Anggota	Al-Khawarizmi
2018-2019	Anggota	Himti

WORK EXPERIENCE

No. of Years	Position	Employer
2015	Magang SMK	Pt. Pelita Cengkareng Paper
2018	Part time	Hotel Amaris
2019	Magang Univ	Sudis PPAPP Jakarta Barat

ACHIEVEMENT

No. of Years	Position	Employer
2016	Peserta	CCNA R&S 1
2017	Peserta	CCNA R&S 2
2018	Peserta	CCNA R&S 3
2019	Peserta	CCNA R&S 4
2019	Peserta	Digital talent Scholarship
2020	Peserta	CSCU

HOBBIES

Sports : - Sepak bola
 - Futsal