

ABSTRAK

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Judul Laporan Skripsi : Analisa Kemampuan Penanganan COVID-19 di Indonesia dengan Menggunakan Algoritma K-Means Clustering dan Artificial Neural Network (ANN)
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Mewabahnya pneumonia baru yang dikenal sebagai COVID-19 yang disebabkan oleh Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) yang terjadi di seluruh dunia, menyebabkan WHO menetapkan kejadian tersebut sebagai Public Health Emergency of International Concern (PHEIC) sehingga WHO menyatakan sebagai pandemi. Akibat pandemi tersebut semua negara yang terdampak merespon dengan berbagai aturan dan kebijakan mengikuti standar WHO serta aturan dan kebijakan tambahan PSBB dan PPKM seperti di Indonesia untuk menekan penyebaran COVID-19. Indonesia dalam kurun waktu cukup singkat sekitar 4 (empat) bulan sejak ditetapkannya sebagai pandemi, Case Fatality Rate mencapai 4.8% dengan jumlah kasus terkonfirmasi sebesar 70.736, meninggal 3.417. Indonesia mengalami masa pandemi yang cukup Panjang sejak SARS-CoV-2, berlanjut dengan munculnya virus jenis Delta dan Omicron. Melihat fakta tersebut peneliti tertarik untuk melihat seperti apa pandemi yang terjadi di Indonesia dan bagaimana kemampuan dalam penanganannya. Sebagai solusi peneliti menggunakan algoritma K-Means Clustering dan Artificial Neural Network dalam melakukan analisa. Tujuan penelitian ini untuk mendapatkan gambaran yang komprehensif tentang penyebaran COVID-19 di Indonesia berikut analisa atas kemampuan penanganannya. Data yang digunakan diambil dari data penyebaran COVID-19 di Indonesia terdiri dari 38 atribut dan 31.823 instance. Hasil penelitian dengan menggunakan algoritma K-Means Clustering menunjukkan 15 Provinsi terjadi penurunan Case Fatality Rate sebesar 1,20%, 15 Provinsi lainnya terjadi kenaikan Case Fatality Rate sebesar 0,61% dan 4 Provinsi sisanya diberikan atensi khusus karena terjadi kenaikan Case Fatality Rate cukup tinggi sebesar 1,56%. Total rata-rata Case Fatality Rate Nasional menurun sebesar 0,08% menunjukkan penanganan COVID-19 di Indonesia dilakukan dengan baik. Pemodelan menggunakan algoritma Artificial Neural Network terhadap data penyebaran COVID-19 di Indonesia memberikan tingkat akurasi sebesar 79%.

Kata Kunci: Pandemi COVID-19, K-Means Clustering, Artificial Neural Network (ANN), SARS-CoV-2, Delta, Omicron

ABSTRACT

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by Using the K-Means Clustering Algorithm and Artificial
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The outbreak of a new pneumonia known as COVID-19 caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) is occurring worldwide, causing WHO to designate this event as a Public Health Emergency of International Concern (PHEIC) so that WHO declares as a pandemic. As a result of the pandemic, all affected countries responded with various rules and policies following WHO standards as well as additional PSBB and PPKM rules and policies such as those in Indonesia to suppress the spread of COVID-19. Indonesia in a relatively short period of about 4 (four) months since it was declared a pandemic, the Case Fatality Rate reached 4.8% with the number of confirmed cases of 70,736, 3,417 deaths. Indonesia has experienced a fairly long pandemic period since SARS-CoV-2, followed by the emergence of the Delta and Omicron viruses. Seeing these facts, researchers are interested in seeing what kind of pandemic is occurring in Indonesia and how capable we are of handling it. As a solution, researchers use the K-Means Clustering algorithm and Artificial Neural Networks in conducting the analysis. The purpose of this research is to get a comprehensive picture of the spread of COVID-19 in Indonesia along with an analysis of the ability to handle it. The data used is taken from data on the spread of COVID-19 in Indonesia consisting of 38 attributes and 31,823 instances. The results of the study using the K-Means Clustering algorithm showed that 15 Provinces had a decrease in Case Fatality Rate by 1.20%, 15 other Provinces had an increase in Case Fatality Rate by 0.61% and the remaining 4 Provinces were given special attention because there was an increase in Case Fatality Rate sufficiently high by 1.56%. The total average National Case Fatality Rate decreased by 0.08% indicating that the handling of COVID-19 in Indonesia was carried out well. Modeling using the Artificial Neural Network algorithm for data on the spread of COVID-19 in Indonesia provides an accuracy rate of 79%.

Keywords: COVID-19 Pandemic, K-Means Clustering, Artificial Neural Network (ANN), SARS-CoV-2, Delta, Omicron