

**KOMPARASI FUNGSI AKTIVASI DALAM PREDIKSI
KASUS TERINFEKSI COVID-19 DI DKI JAKARTA
MENGUNAKAN METODE *RECURRENT NEURAL
NETWORK***

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ABSTRAK

Coronavirus disease 2019 (Covid-19) adalah penyakit menular yang disebabkan oleh jenis coronavirus baru yaitu Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2). Terhitung tanggal 23 November 2021 jumlah kasus terinfeksi Covid-19 di Indonesia sebanyak 4.254.433 kasus dengan kasus terinfeksi terbanyak terjadi di Provinsi DKI Jakarta sebanyak 863.551 kasus (20,29%). Pada penelitian ini, dilakukan prediksi kasus terinfeksi Covid-19 di DKI Jakarta menggunakan salah satu metode machine learning yaitu Recurrent Neural Network (RNN) dengan melakukan komparasi fungsi aktivasi Sigmoid, Tanh dan ReLU di hidden dan output layer. Model prediksi RNN yang paling optimal diharapkan dapat menjadi salah satu alat dalam mengambil keputusan oleh pemerintah, tenaga kesehatan, dan pihak yang membutuhkan keputusan, serta pihak terkait dapat mengantisipasi dan waspada apabila jumlah kasus Covid-19 diprediksi tinggi. Berdasarkan implementasi, model RNN yang dibangun oleh fungsi aktivasi ReLU di hidden layer dan Tanh di output layer menjadi model terbaik dibandingkan model RNN dengan kombinasi fungsi aktivasi lainnya. Performa model RNN (ReLU-Tanh) berdasarkan mean square error pada testing data adalah 0.000651.

Kata Kunci: Covid-19, fungsi aktivasi, machine learning, MSE, prediksi, RNN



ABSTRACT

Coronavirus disease 2019 (Covid-19) is an infectious disease caused by a new type of coronavirus, namely Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2). As of November 23, 2021, the number of cases infected with Covid-19 in Indonesia was 4,254,433 cases with the most cases occurring in DKI Jakarta Province as many as 863,551 cases (20.29%). In this study, predictions of cases of Covid-19 infection in DKI Jakarta were carried out using one of the machine learning methods, namely Recurrent Neural Network (RNN) by comparing the activation functions of Sigmoid, Tanh and ReLU in the hidden and output layers. The most optimal RNN prediction model is expected to be one of the tools in decision making by the government, health workers, and parties who need decisions, and related parties can anticipate and be alert if the number of Covid-19 cases is predicted to be high. Based on the implementation, the RNN model built by the ReLU activation function in the hidden layer and Tanh in the output layer is the best model compared to the RNN model with a combination of other activation functions. The performance of the RNN model (ReLU-Tanh) based on the mean square error of the testing data is 0.000651.

Keywords: *Covid-19, activation function, machine learning, MSE, prediction, RNN*

