

# **DESIGN A TELEGRAM BOTT FOR JAKARTA FLOOD FORECAST USING THE MARKOV CHAIN FUZZY TIME SERIES ALGORITHM**

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## **ABSTRACT**

*Floods are one of the most common disaster phenomena in Indonesia. Based on data from natural disasters that most frequently occurred in 2011-2020, floods have recorded 7571 events. In addition, in the Jakarta area itself in the first trimester of 2020 there were 101 flood events and claimed 23 victims. The Jakarta local government has made efforts to create a flood early warning in the form of a website containing data on water levels and alert status. However, the website has not been able to provide information on potential floods in the future. Based on these problems, the researchers built a forecasting system based on Telegram Bot that implements the Fuzzy Time Series Markov Chain algorithm. The data used for forecasting is the average hourly water level data sourced from the Jakarta flood post website. The study used data on the average water level from the P.A. Marina Ancol monitoring post as many as 145 data from 25 May at 00.00 to 00.00 s.d. 1 June 2022 at 00.00 as sample data. For forecasting the next period at the monitoring post P.A. Marina Ancol on 1 June 2022 at 02.00, the average water level was 210,0479025 cm. Forecasting at the P.A. Marina Ancol monitoring post obtained a MAPE value of 1.772627964% and an RMSE of 4.011361757568567.*

**Keywords:** *Forecasting, Flood, Telegram Bot, Fuzzy Time Series Markov Chain*