ABSTRACT

CLUSTERING THE LEVEL OF MOBILITY OF THE INDONESIAN PEOPLE DURING THE COVID-19 PANDEMIC USING THE FUZZY C-MEANS ALGORITHM WITH PARTICLE SWARM OPTIMIZATION

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The COVID-19 outbreak has severely impacted the health, livelihoods, environment, psychology, education, and transportation of people around the world. Several important decisions must be made to ensure public safety during this crisis. To avoid the spread of the virus, several things have been put in eeeee: attendance on public mobility. Mobility occurs when people gather in various places, which is why Covid-19 spreads from one to another. Therefore, it is necessary to analyze the areas affected by Covid-19 and categorize them into high, medium, and low-risk areas based on their level of mobility. This study analyzes the mobility pattern in Indonesia and applies a hybrid variant based on Fuzzy C-Means grouping combined with Particle Swarm Optimization (PSO). This study uses an aggregated data source from Google (Covid-19 Community Mobility Reports) from Indonesia. From the results of clustering using a combination of Fuzzy C-Means and Particle Swarm Optimization, it was found that the DBI accuracy increased by about 66%, namely 0.391 and succeeded in dividing the provinces in Indonesia based on the level of mobility density, namely high, medium, and low categories.

Keywords— Pandemic, Covid-19, Clustering, Fuzzy C-Means, Particle Swarm Optimization, Mobility