

ABSTRACT

The Covid-19 virus is a new virus that started in Wuhan, until now the virus is still spreading all over the world, one of which is Indonesia which has also been affected by the Covid-19 virus. The rate of spread of Covid-19 cases can be systematically analyzed using the SIR Susceptible (S), Infected (I) and Removed (R) mathematical models. The use of the term Removed in this article is because this population consists of recovered and deceased individuals, where the rate of spread can be obtained using an optimization method, namely Particle Swarm Optimization (PSO). The SIR Susceptible (S), Infected (I) and Removed (R) models can capture the phenomenon of the spread of the Covid-19 virus, but several parameters, namely the rate of spread, need further investigation. In this case, the PSO method can obtain values from the spread rate quite optimally and quickly.

In this final project, Particle Swarm Optimization (PSO) has various functions as rate optimization for Covid-19 must have the basic function of determining the spread of a value. Particle Swarm Optimization (PSO) can have several important parts such as N (number of population), C (individual abilities (cognitive) and social influence (group) and shows the value of the position of a particle against the memory of the group), Maxit (determines the maximum number of iterations outside), W (returns the real value), WD (time domain sample), Pbest (lowest objective function value), Gbest (lowest objective function value among all particles for all previous iterations). For experiments that have been carried out that a value of for each particle position, the higher the particle position value, the higher the value of the resulting beta and delta.

Keywords: *Particle Swarm Optimization (PSO), Covid-19, Optimization*