

## **ABSTRACT**

*Vehicular networks are networks with dynamic vehicle-based nodes, so it has intermittent connectivity on its path. Even under certain conditions, a path from source node to destination node has not been established perfectly which causes diverse delay. Architecture of Delay-Tolerant Networks (DTN) was created to confront limitation of this kind of connectivity. DTN was formed from end-to-end concept, asynchronous traffic data, and bundle-oriented communication.*

*The DTN routing protocol must have a very good performance and also more efficient network resource usage (e.g. bandwidth and storage). This research refers to one of the routing protocols for Opportunistic Mobile Networks (OMNs), Simulated Annealing-based (SeeR). Simulated Annealing (SA) was inspired from the process of heating the metal to a very high temperature, known as the physical annealing process in metallurgy. The obtained liquid metal is further formed slowly while cooling it, resulting in a desired metal structure with less damage.*

*The past research, SeeR was studied in OMNs explaining how it works and demonstrating SeeR performance based on defined cost metrics. However, no studies have considered the choices of cost metrics for SeeR's performance. Based on this, the present study attempts to further analyze performance by comparison of different choices for SeeR's cost metrics, with another additional studi parameter such as a number and velocity of mobile nodes.*

*This studies show that SeeR is able to reduce the average value of latency while maintaining a good delivery probability. In the best test results, SeeR is able to reduce more than 50% of average latency. By analyzing the deficiencies and the advantages of SeeR's performance based on the parameters tested, it can be deduced as a consideration to adjust the environmental conditions for the application of DTNs technology.*

**Keywords :** *Delay-Tolerant Networks, Simulated Annealing, Routing*