# ABSTRAK

**Abstrak—**Delay Tolerant Network (DTN) sering menggunakan metode *multi-copy routing* untuk meningkatkan keberhasilan pengiriman pesan. Namun, metode ini menyebabkan pemborosan baterai dan memori (*buffer*) karena jumlah salinan pesan yang berlebihan. Penelitian ini mengusulkan metode pengendalian jumlah salinan pesan berdasarkan batas minimal (*threshold*) sisa baterai dan kapasitas *buffer* pada setiap *node*. Melalui metode ini, pesan hanya akan disalin jika kondisi baterai dan memori *node* tujuan memenuhi syarat yang ditentukan. Hasil simulasi menggunakan *The ONE Simulator* menunjukkan bahwa metode usulan berhasil menghemat konsumsi energi dan ruang *buffer* secara signifikan, dengan tingkat keberhasilan pengiriman pesan (*delivery ratio*) yang tetap tinggi.

**Kata Kunci:** *Delay Tolerant Network*, *Multi-copy Routing*, Baterai *Node*, *Buffer Node*, *Threshold Control*, Simulasi.

# ABSTRACT

**Abstract**—Delay Tolerant Network (DTN) frequently employs *multi-copy routing* methods to enhance message delivery success. However, this approach often leads to battery and buffer depletion due to an excessive number of message copies. This study proposes a message replication control method based on minimum *threshold* limits for remaining battery and buffer capacity at each node. Using this method, messages are only replicated if the battery and memory conditions of the destination node meet the specified requirements. Simulation results using *The ONE Simulator* demonstrate that the proposed method significantly optimizes energy consumption and buffer space utilization while maintaining a high message delivery ratio.

**Keywords:** *Delay Tolerant Network*, *Multi-copy Routing*, *Node* Battery, *Node* Buffer, *Threshold Control*, Simulation.