

Machine Learning-based Opportunistic Network Data Analytics-OppNDA

Abstract

Opportunistic networking and Delay-Tolerant Networking (DTN) focus on communication in environments with frequent disruptions, high latency, and no guaranteed end-to-end paths. Key applications include disaster relief, vehicular networks, and content distribution in infrastructure-less settings. Research in this domain aims to optimize delivery probability, reduce average latency, and minimize overhead ratios. The complexity of this research stems from the complex network data analytics pipeline, which often involves processing large volumes of raw data. To address these challenges, the DHMAINetRG Research Group developed the Opportunistic Network Data Analyzer (OppNDA). This tool enhances the ONE simulator's configuration and post-processing capabilities while offering a user-friendly graphical interface to assist researchers with limited experience. OppNDA provides a unified, automated framework that streamlines simulation setup, data processing, and visualization. By bridging the gap between simulation configuration and post-processing, it accelerates research in delay-tolerant communication.