

## **SINR Estimation of the Links** In the Airborne Network

Motivation	In the dynamic nature of Airborne Tx Power: 40 Wats Networks links and network topol-
	ogy frequently changes. These rapid evolutions can result in unsta- ble link qualities, impacting overall network performance. To enhance performance in such dynamic envi- ronments, accurately forecasting fu- ture link quality, such as Signal-to- Interference-plus-Noise Ratio (SINR), based on current network information (e.g., transmit power and node velocity) is crucial. This predictive capability would enable nodes to proactively adjust their transmission parameters such as transmission power, route or modulation coding scheme to achieve specific objectives, e.g., maximizing bottleneck data rate, minimizing packet loss, or in creasing network throughput. This thesis will focus on the SINR estimation o links in future network states.
Your Task	<ul> <li>Literature Research</li> <li>Creation of the dataset via simulation. Simulation platform would be NS3 of Python</li> <li>Evaluation of the Machine Learning approaches. Potential approach would be Graph Neural Network</li> <li>Hyper optimization of developed Machine Learning Algorithm</li> </ul>
Requirements	<ul> <li>Knowledge of Machine Learning</li> <li>Basic understanding of Wireless Communication</li> <li>Proficiency in Python and PyTorch</li> <li>Experience with the NS-3 network simulator would be a plus</li> </ul>
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