

Master's Thesis

Adaptive regenerator location selection in EON using reinforcement learning

Elastic Optical Networks (EON) provide flexibility in bandwidth allocation, leading to improvement in spectrum utilization. The signal transmission capability is also improved, as lightpaths with better configurations of higher data rate and better modulation schemes can be deployed. The reach of the optical signal is controlled by the receivers' capability to receive the signal successfully, subjected to the received OSNR. This reach can be extended by using regeneration. Existing works use simple heuristics to find the locations for regeneration. The challenge is to update/ increase the regeneration locations based on the current network state. The optimal placement of regenerators and assignment of regeneration locations should aid in improving spectrum efficiency.

In this work, the student is expected to

- Designing and implementing an adaptive regeneration location selection algorithm, which considers the current network state, available spectrum, and available routing scenario, using reinforcement learning.
- Evaluating the performance of the algorithm in realistic topologies.

Interested students, please send an email with a short introduction of yourself along with your CV and grade transcript.

Prerequisites

- Strong Python and Java programming skills
- Experience in ML techniques (including reinforcement learning)
- Knowledge of optimization problems and classical methods is preferable

Contact

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Advisors

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