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Machine-Learning-as-a-Service for Optical Networks: Use Cases and Benefits

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ABSTRACT

Machine Learning (ML) models have been a valuable tool to assist on the design and operation of optical networks. Several use cases have benefited from ML models, such as Quality-of-Transmission (QoT) estimation, device modeling, constellation shaping, and attack/anomaly prediction/detection. ML models are expected to be ubiquitous in optical network management and operations thereof. However, the amount of human intervention and empirical decisions needed to select the exact ML model, train and evaluate its performance, and ultimately deploy and use the model, may become a bottleneck for widespread ML use in optical networks. Machine-Learning-as-a-Service (MLaaS) has the potential to greatly reduce human intervention and empirical decisions during the creation, evaluation, and deployment of ML models. In this talk, we will firstly discuss optical network use cases that can benefit from MLaaS. Then, we detail our proposed architecture for MLaaS. Finally, performance results for two use cases will be presented.