Experimental demonstration of a cognitive quality of transmission estimator for optical communication systems - DTU Orbit (28/12/2018)

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The impact of physical layer impairments in optical network design and operation has received significant attention in the last years, thereby requiring estimation techniques to predict the quality of transmission (QoT) of optical connections before being established. In this paper, we report on the experimental demonstration of a case-based reasoning (CBR) technique to predict whether optical channels fulfill QoT requirements, thus supporting impairment-aware networking. The validation of the cognitive QoT estimator is performed in a WDM 80 Gb/s PDM-QPSK testbed, and we demonstrate that even with a very small and not optimized underlying knowledge base, it achieves between 79% and 98.7% successful classifications based on the error vector magnitude (EVM) parameter, and approximately 100% when the classification is based on the optical signal to noise ratio (OSNR).

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