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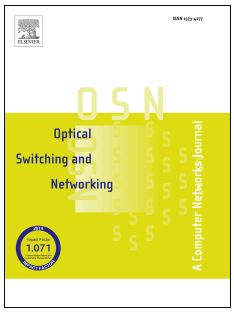

Traffic prediction based on machine learning for elastic optical networks

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Traffic prediction based on machine learning for elastic optical networks

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Abstract

The increased data transfers and rapidly evolving cloud services lead to the inevitable need for the new techniques applied to communication networks, such as AI, machine learning, and data analysis. In this paper, we present two approaches that employ the machine learning techniques to enable traffic prediction in Elastic Optical Networks. Results show that the application of adaptive strategies has superior performance, which is a future opportunity for telecommunication operators to improve the efficiency of their network architectures.

Keywords: elastic optical networks, dynamic routing, cloud services, machine learning, traffic prediction

1. Introduction

Over the last decade, optical networks have gone through a rapid evolution, starting with 16 wavelengths of 2.5 Gb/s in the late 1990s to 80 wavelengths of 100 Gb/s in 2012 [1, 2]. Today, the term optical networks denote high-capacity telecommunications networks based on optical technologies and components that can provide capacity, provisioning, routing, grooming, and/or restoration at the wavelength level. With estimated exponential traffic growth, future networks have to boost their capacity. The channel capacity will need

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