

Machine Learning for Network Routing¹

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Abstract — *Though currently a "hot topic", over the past fifteen years [1][2], there has been significant work on the use of machine learning to design large scale computer-communication networks, motivated by the complexity of the systems that are being considered and the unpredictability of their workloads. A topic of great concern has been security [3] and novel techniques for detecting network attacks have been developed based on Machine Learning [8]. However the main challenge with Machine Learning methods in networks has concerned their compatibility with the Internet Protocol and with legacy systems, and a major step forward has come from the establishment of Software Defined Networks (SDN) [4] which delegate network routing to specific SDN routers [4]. SDN has become an industry standard for concentrating network management and routing decisions within specific SDN routers that download the selected paths periodically to network routers, which operate otherwise under the IP protocol. In this paper we describe our work on real-time control of Security and Privacy [7], Energy Consumption and QoS [6] of packet networks using Machine Learning based on the Cognitive Packet Network [9] principles and their application to the H2020 SerIoT Project [5].*

Keywords - *Cognitive Packet Networks, Internet of Things, QoS, Security, Random Neural Networks, Smart Routing*

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¹ Research Supported by the European Commission, SerIoT Research and Innovation Project, under Grant Agreement 780139.

