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The Quest for Safe Deep Reinforcement Learning-driven Network Slicing: Progress, Pitfalls and Potential

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ABSTRACT

The quest for the efficient and autonomous placement of network services is crucial to progressing towards a fully automated network, commonly referred to as a “zero-touch network”. In this presentation, we focus on the results of our research into exploiting the potential of deep reinforcement learning strategies in the field of network slicing. Our aim is not only to elucidate the remarkable advantages these techniques offer over conventional methods but also to address their inherent limitations. In addition, we will highlight new avenues that we are currently exploring to enhance the reliability aspects of network slicing when deploying techniques based on deep reinforcement learning. During this presentation, we will outline some of the solutions and tangible results we have obtained in the pursuit of this critical mission.

CCS Concepts

• Networks ~ Network algorithms ~ Network services

Author Keywords

Network slicing; Virtual Network Embeddings; Post-5G; Reinforcement learning; Safety

BIOGRAPHY

Yassine HADJADJ AOUL (yhadjadj@irisa.fr) is currently working as a full professor at the University of Rennes, France, since 2022, where he is also a member of the IRISA Laboratory and the INRIA team-project Ermine. He received a B.Sc. in computer engineering with high honors from Mohamed Boudiaf University, Oran, Algeria, in 1999. Dr. Hadjadj received his Master’s and Ph.D. degrees in computer science from the University of Versailles, France, in 2002 and 2007, respectively. He was an assistant professor at the University of Versailles from 2005 to 2007. He was also a post-doctoral fellow at the University of Lille 1 and a research fellow under the EUFP6 EIF Marie Curie Action at the National University of Dublin (UCD). Then, he joined the University of Rennes 1 as an associate professor. His main

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