2020 IEEE | DOI: 10.1109/VTC2020-Fall49728.2020.9348605

Machine Learning-Assisted UAV Operations with the UTM: Requirements, Challenges, and Solutions

Aly Sabri Abdalla and Vuk Marojevic
Department of Electrical and Computer Engineering, Mississippi State University, MS 39762, USA.
Email: {asa298|vm602}@msstate.edu

***Abstract*—Unmanned aerial vehicles (UAVs) are emerging in commercial spaces and will support many applications, such as smart agriculture, dynamic network deployment, network coverage extension, surveillance and security. The unmanned aircraft system (UAS) traffic management (UTM) provides a framework for safe UAV operation by integrating UAV controllers and central data bases through a communications network. This paper discusses the challenges and opportunities for machine learning (ML) for effectively providing critical UTM services. We introduce the four pillars of UTM—operation planning, situational awareness, failure detection and recovery, and remote identification—and discuss the main services, specific opportunities for ML and the ongoing research. We conclude that the multi-faceted operating environment and operational parameters**