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ABSTRACT

In the evolution of artificial Intelligence (AI) and machine learning (ML), reasoning, knowledge representation, planning, learning, natural language processing, perception, and the ability to move and manipulate objects have been widely used. These features enable the creation of intelligent mechanisms for decision support to overcome the limits of human knowledge processing. In addition, ML algorithms enable applications to draw conclusions and make predictions based on existing data without human supervision, leading to quick, near-optimal solutions even in problems with high dimensionality. Hence, autonomy is a key aspect of current and future AI/ML algorithms.

This chapter focuses on the development and implementation of AI/ML technologies for 5G and future networks. The objective is to illustrate how these technologies can be smoothly migrated into 5G systems to increase their performance and to decrease their cost. To that end, this chapter presents the Drivers, Needs, Challenges, Enablers, and Potential Solutions identified for the AI/ML field as applicable to future networks over three-, five-, and ten-year horizons.

AI/ML applications for 5G are wide and diverse. In this document, some of the key areas are described which includes networking, securing, cloud computing and others. Over time, this white paper will evolve to encompass even more areas where AI/ML technologies can improve future network performance objectives.

Key words:

AI, ML, DL, CNN, DNN, RNN, GAN, GPU, Cloud Computing, MEC

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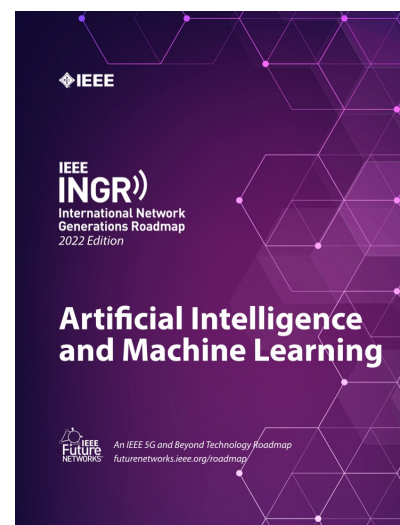
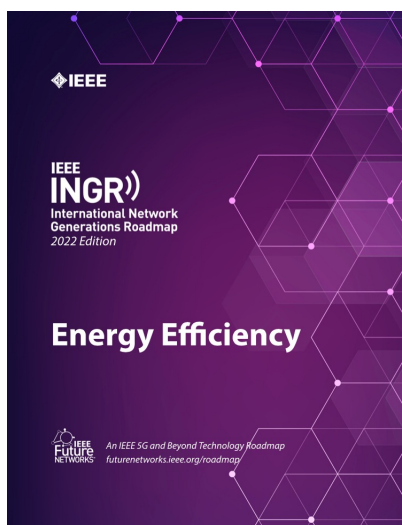
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