

Title: Communications for Artificial Intelligence

Abstract:

Artificial intelligence (AI) and machine learning (ML) emerges for wide-range applications. When 5G mobile communications gets into the stage of launching diverse services through three pillar technologies (eMBB, mMTC, and uRLLC) in complex user traffic and applications scenarios, AI/ML has been considered to further enhance wireless networking of 5G and beyond, to be viewed as “AI for Communications”. On the other hand, wireless communication can significantly enhance the collective performance of AI agents, to form a networked multi-agent system or more generally networked AI that suggests a new technological frontier of future digital society. Two widely applied scenarios have been considered: resource-sharing multi-agent systems, and collaborative multi-agent systems, with wireless networking capability, while each AI agent is autonomous governed by ML. Different requirements of such machine-to-machine communication have been highlighted to imply the need of streamlining networking architecture to effectively accommodate AI/ML technology. Enhancing uRLLC and mMTC, this integrated computing and networking technology immediately contributes massive operation of autonomous vehicles, robots, and smart manufacturing (i.e. industry 4.0).

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