# AI-EDGE: Designing future XG networks and distributed intelligence

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## Abstract :

Networking and AI are two of the most transformative information technologies. These technologies have helped improve the quality of the human condition, contributed to national economic competitiveness, national security, and national defense. The AI-EDGE Institute is aimed at leveraging the synergies between both networking and AI to design the next generation of edge network. A new distributed intelligence plane will be developed to ensure that these networks are self-healing, adaptive, and self-optimized. The future of AI is distributed AI and these intelligent and adaptive networks will in turn unleash the power of collaboration to solve long-standing distributed AI challenges, making AI more efficient, interactive, and privacy preserving. The Institute plans to develop the key underlying technologies for distributed and networked intelligence to enable a host of future transformative applications such as intelligent transportation, remote healthcare, distributed robotics, and smart aerospace. Going beyond research, the Institute recognizes that it is a national priority to educate students, professionals, and practitioners in AI and networks, and substantially grow and diversify the workforce. The Institute will develop novel, efficient, and modular ways of creating and delivering education content and curricula at scale, and to spearhead a program that helps build a large diverse workforce in AI and networks spanning primary and secondary education to university students and faculty. In this talk, the speaker gave an overview of the key components of the Institute, identifying a set of interesting research directions. Further, the speaker will also describe through a case study involving caching, why the edge is so different from the core of the network, and how Machine Learning (ML) tools and techniques can be developed to improve performance.

## Biography :

Ness B. Shroff received his Ph.D. degree from Columbia University, NY in 1994 and joined Purdue university immediately thereafter as an Assistant Professor. In July 2007, he joined the ECE and CSE departments at The Ohio State University, where he holds the Ohio Eminent Scholar Chaired Professorship of Networking and Communications. He currently serves as the Principal Investigator and Institute Director of the NSF AI Institute on Future Edge Networks and Distributed Intelligence (ai-edge.osu.edu).
Dr. Shroff's research focuses on fundamental problems in machine learning, network optimization, stochastic control, and algorithmic design. His work contributes to the design, control, performance, pricing, and security of complex systems such as communication networks, computing, storage and cloud based systems, social networks, and recommendation systems.
He served as the Editor in Chief of the IEEE/ACM Trans. on Networking, and currently serves as the Steering Committee Chair of ACM Mobihoc. He has also been the technical program chair of a number of IEEE and ACM conferences (e.g., IEEE INFOCOM 2003, ACM Mobihoc 2008, etc.), and has served on the editorial boards of various IEEE journals, as well as on the technical and executive committees of several major conferences and workshops.
Dr. Shroff is a Fellow of the IEEE, and a National Science Foundation CAREER awardee. His papers have received numerous awards at top-tier venues, including IEEE INFOCOM (2006,2008,2016), in journal of Communication and Networking (2005), and in Computer Networks (2003). He received the IEEE INFOCOM achievement award for seminal contributions to scheduling and resource allocation in wireless networks, in 2014.