

Computation Offloading and Activation of Mobile Edge Computing Servers: Minority Game Models

Dr. Ekram Hossain, *IEEE Fellow, Intel*

Abstract: With the increasing popularity of resource-intensive mobile applications, offloading computationally expensive tasks to the edge nodes such as base stations and access points will be a key feature of Mobile Edge Computing (MEC) networks. However, compared to the classical remote cloud, these edge nodes are typically equipped with low power computational resources with limited computational capability. Therefore, efficient computation offloading systems need to be designed where the servers are efficiently utilized while fulfilling the users' latency constraints. One such approach is to save energy by dynamic server mode selection between active and inactive modes. In this talk, I will present novel Minority game (MG)-based distributed methods for computation offloading and server mode selection for MEC networks. The basics of a minority game model will be also discussed. In the proposed methods, efficient activation of MEC servers is ensured while users' quality of experience (QoE) requirements are also satisfied.

Bio: Ekram Hossain (IEEE Fellow) is a Professor and the Associate Head (Graduate Studies) in the Department of Electrical and Computer Engineering at University of Manitoba, Canada. He is a Member (Class of 2016) of the College of the Royal Society of Canada. Also, he is a Fellow of the Canadian Academy of Engineering. Dr. Hossain's current research interests include design, analysis, and optimization beyond 5G cellular wireless networks. He was elevated to an IEEE Fellow "for contributions to spectrum management and resource allocation in cognitive and cellular radio networks". He received the 2017 IEEE ComSoc TCGCC (Technical Committee on Green Communications & Computing) Distinguished Technical Achievement Recognition Award "for outstanding technical leadership and achievement in green wireless communications and networking". Dr. Hossain has won several research awards including the "2017 IEEE Communications Society Best Survey Paper Award and the 2011 IEEE Communications Society Fred Ellersick Prize Paper Award. He was listed as a *Clarivate Analytics Highly Cited Researcher in Computer Science* in 2017, 2018, and 2019. Currently, he serves as the Editor-in-Chief of IEEE Press and an Editor for the IEEE Transactions on Mobile Computing. Previously, he served as the Editor-in-Chief for the IEEE Communications Surveys and Tutorials (2012-2016). He is a Distinguished Lecturer of the IEEE Communications Society and the IEEE Vehicular Technology Society. Also, he is an elected member of the Board of Governors of the IEEE Communications Society for the term 2018-2020.