Preface

This volume contains the papers presented at MobiArch 2022: Workshop on Mobility in the Evolving Internet Architecture 2022 held on October 21, 2022 in Sydney.

There were 14 submissions. Each submission was reviewed by at least 3, and on the average 4.8, program committee members. The committee decided to accept 10 papers. The program also includes 3 invited talks.

Abstract

According to Cisco Annual Internet Report, over 70 percent of the global population will have mobile connectivity by 2023, while machine-to-machine (M2M) communications will account for half of the global connections. In addition, the COVID-19 pandemic outbreak accelerated the need for reliable broadband Internet and mobility support at scale.Accordingly, the last two decades have witnessed the continuous evolution of mobile network architectures to support the unprecedented growth in mobile data traffic and quality of service demands. Higher-throughput and lower-latency 5G networks, Network Function Virtualization, Network Slicing, Mobile Edge Computing, Open RAN, and RAN disaggregation are only a few of the research trends that promise to deliver a more reliable, faster, and secure mobile Internet experience.ACM MobiArch 2022 will continue to serve as a forum for discussing recent research trends and future directions gathered around all aspects of mobile communication technologies and mobile Internet architectures, such as system and radio access challenges that have to be faced to implement reliable, optimized, and scalable mobile networked systems.

Introduction

ACM MobiArch has advanced to its 17th anniversary as one consolidated tradition for bringing together an important number of researchers and industry players working in different aspects of mobile communication technologies and mobile network architectures. The workshop will continue to serve as a forum for discussing recent research trends and future directions gathered around all aspects of mobile communication technologies and mobile Internet architectures, such as system and radio access challenges that have to be faced to implement reliable, optimized, and scalable mobile networked systems.

Scope

The workshop solicits original, previously unpublished submissions covering network architectural issues and system design challenges for mobility in the evolving mobile Internet.

- Key research topics include but are not limited to:

- Effects of COVID-19 Pandemic on mobile network architecture

- Mobile computing and networking architectures in 5G-and-beyond

- Software-defined networking (SDN) and network function virtualization (NFV)

- Mobile Cloud Computing (MCC) and Mobile Edge Computing (MEC)

- mmWave and Terahertz wireless communications

- Acoustic and visible-light communications

- Connected autonomous vehicles

- IoT and smart cities

- Machine to Machine (M2M) communications

- Location management and positioning

- Field trials, deployment and evaluation of innovative mobile Internet architectures

- Blockchain for mobile networks

- Machine Learning and AI for mobile networks

- Security and privacy for mobile networks

Committee Members

Dr. Yipeng Zhou, TPC co-chair (yipeng.zhou@mq.edu.au) is a senior lecturer in computer science with School of Computing of Faculty of Science and Engineering (FSE) at Macquarie University, Australia. He received his PhD degree from The Chinese University of Hong Kong in 2012 and was the recipient of Australia Research Council Discover Early Career Research Award (ARC DECRA) in 2018. His research interests lie in distributed/federated learning, privacy protection and networking. He has published more than 90 peer-reviewed papers including IEEE INFOCOM, IEEE/ACM ToN, IEEE JSAC, IEEE TPDS, IEEE TMC, etc. He served as Area Chairs of IEEE ICME 2021, 2022, Publicity Co-Chair of IEEE DSAA 2022, TPC members of IJCAI, ICDCS, ICC, GLOBECOM, etc., and the leading guest editor of Digital Communications Networks, etc.

Dr. Lorenzo Bertizzolo, TPC co-chair (lbertizzolo@apple.com) is a wireless systems engineer at Apple working on 5G cellular software for iOS. He earned his Ph.D. in Computer Engineering at Northeastern University, in 2021. As a researcher, he worked with AT&T Labs Research, Facebook Connectivity Labs, and Google, network infrastructure team. His focus is 5G/6G networks, wireless networked systems, software-defined networking for wireless systems, MIMO communications, and Non Terrestrial Networks. He earned the "Electrical and Computer Engineering Outstanding Research Award" from Northeastern University in 2020 and the "WiNTECH Best Paper Award" in 2019.

Prof. Stefano Secci, TPC co-chair (stefano.secci@cnam.fr) is professor of networking at Cnam, Paris, France. He received his M.Sc. degree in communications engineering from the Politecnico di Milano, Italy, in 2005, and a dual Ph.D. degree in computer science and networks from the Politecnico di Milano and Télécom Paris-Tech, France. He held postdoctoral positions at NTNU, Norway, and GMU, United States. He was an associate professor with Sorbonne University-UPMC, Paris, France, from 2010 to 2018. He has also covered positions at NTNU, George Mason University, Fastweb Italia, and Ecole Polytechnique de Montréal. His current research resides at the edges between intelligent communication networks, distributed systems, mobile computing and embedded systems. He is the head of the Network and IoT Systems research group at Cnam.

Steering Committee

- Jon Crowcroft, University of Cambridge

- Katherine Guo, Bell Labs Research

- Stefano Secci, Cnam, Paris

- Jianhua He, University of Essex

- Michele Nogueira, Federal Univ. of Parana

- Xiaoming Fu, University of Goettingen

Acknowledgement

The organizers would like to thank the program committee for their service, as well as the invited speakers for sharing their research and perspective.

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September 18, 2022

Yipeng Zhou
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Stefano Secci