

Intelligent Computing & Networking Laboratory (ICNL)

<https://icnl.dgist.ac.kr>

Prof. Jeongho Kwak
ICE, DGIST

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**“Research for
Network Intelligence”**

- Education
 - Ph.D., Electrical Engineering, KAIST, 2015
- Career
 - Assistant Professor, ICE, DGIST, Feb. 2020 - Current
 - Assistant Professor, EE, Daegu Univ. Mar. 2019 - Jan. 2020
 - Marie Skłodowska-Curie Research Fellow, Trinity College Dublin, Ireland, July 2017 – Feb. 2019
 - Postdoctoral Fellow, INRS, Canada, Oct. 2015 – June 2017
- Awards
 - **Marie Skłodowska-Curie** Scholarship, Apr. 2017
 - 2 **Gold** Prizes (2017, 2015), 2 **Silver** Prizes (2016, 2014), 2 **Bronze** Prize (2021, 2013) in **Samsung HumanTech Paper Award**
 - 1st & 2nd Qualcomm Innovation Awards (2015, 2016)
 - 5G Best Paper Award, LG Electronics, 2014

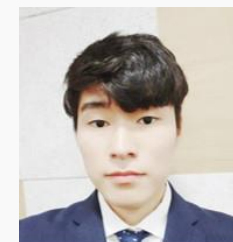
Students



1 BS
student

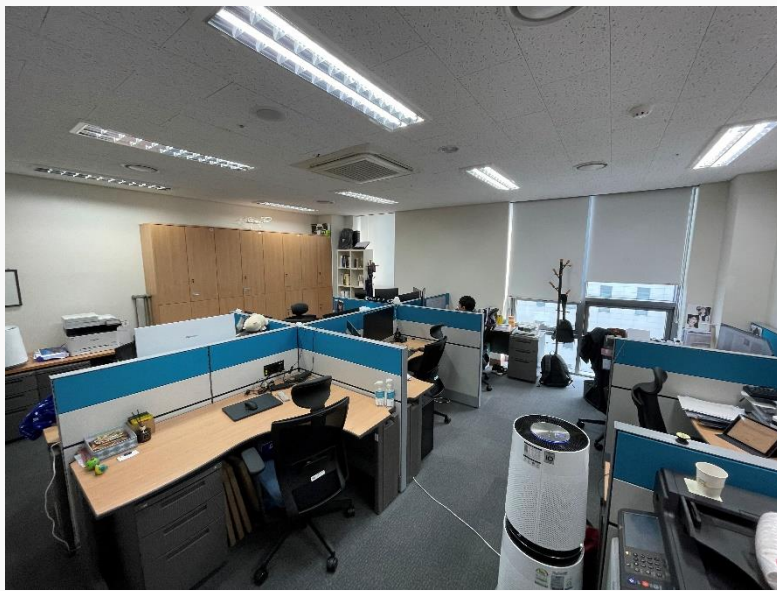


2 MS Students



7 Ph.D. students

Lab: E3, No. 407, No. 421



Research Area

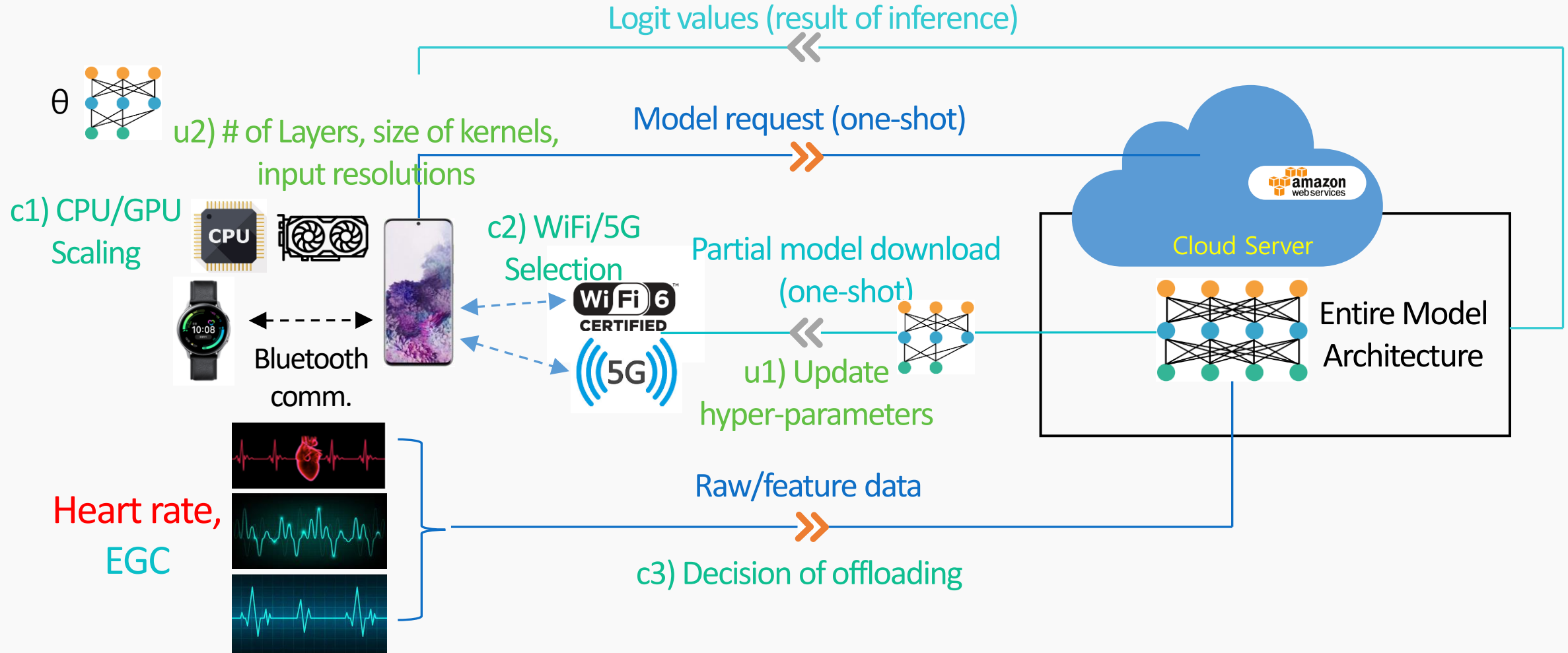


- Multi-Resource Orchestration
 - Cloud/Edge Computing System
 - Compute/Storage/Network Management
 - Optimization in Cloud Computing
 - Learning & Resource

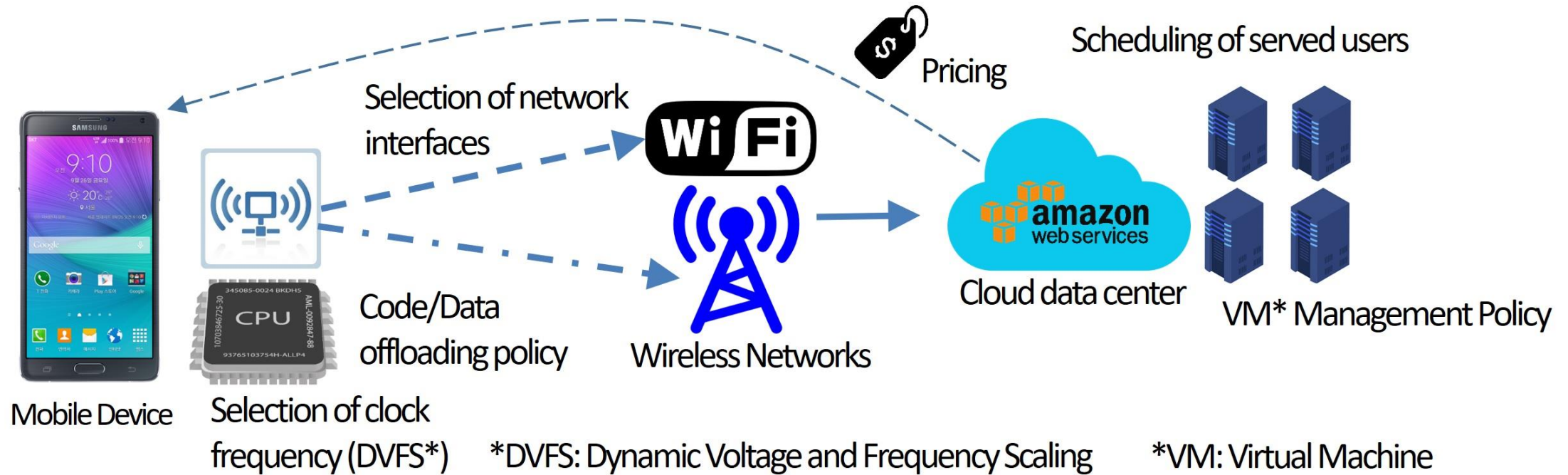
- AI for Mobile Systems
 - Real-time AI Applications
 - Federated Learning
 - Reinforcement Learning in IoT Systems

- Machine Learning for Communications
 - Network Slicing
 - Beamforming in mmWave Networks
 - Machine Learning for 5G Networks

Inference & Resource: Joint Optimization of Learning Model and Resource

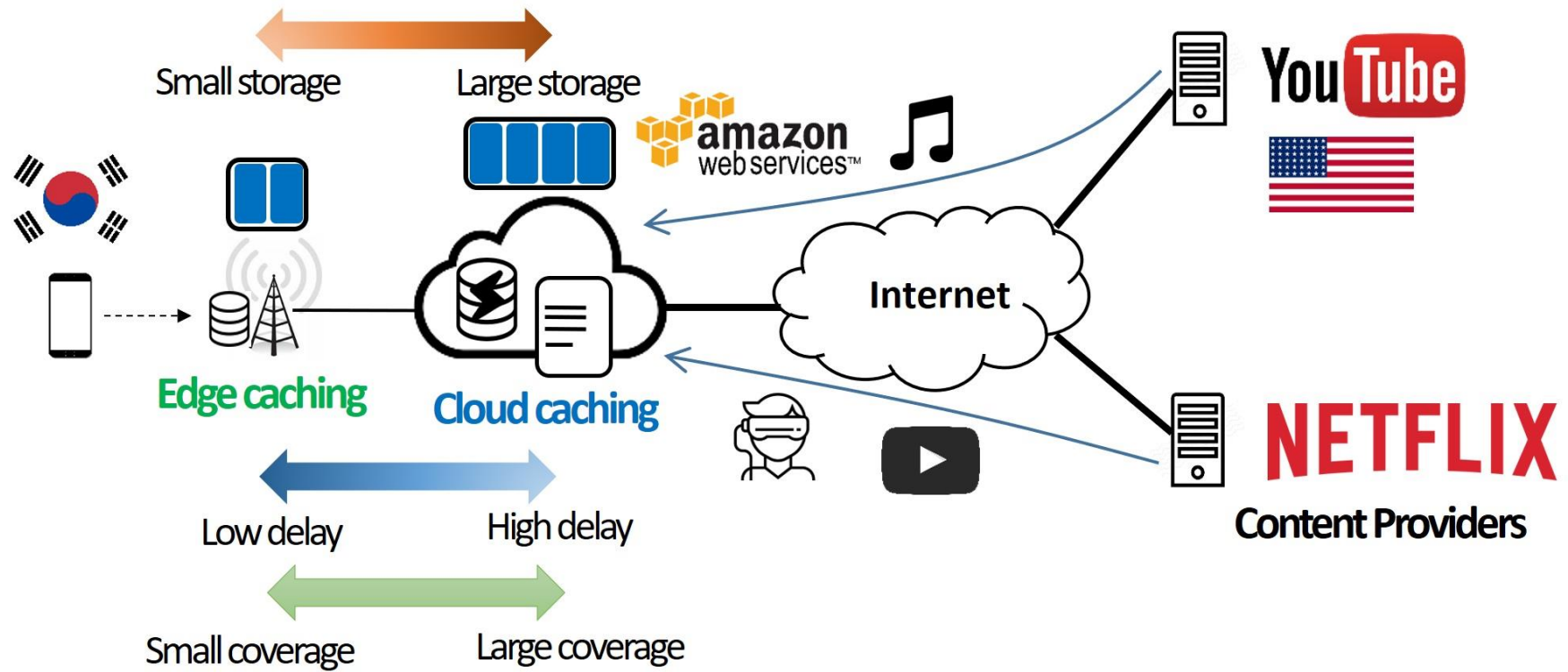


Cloud Computing Systems



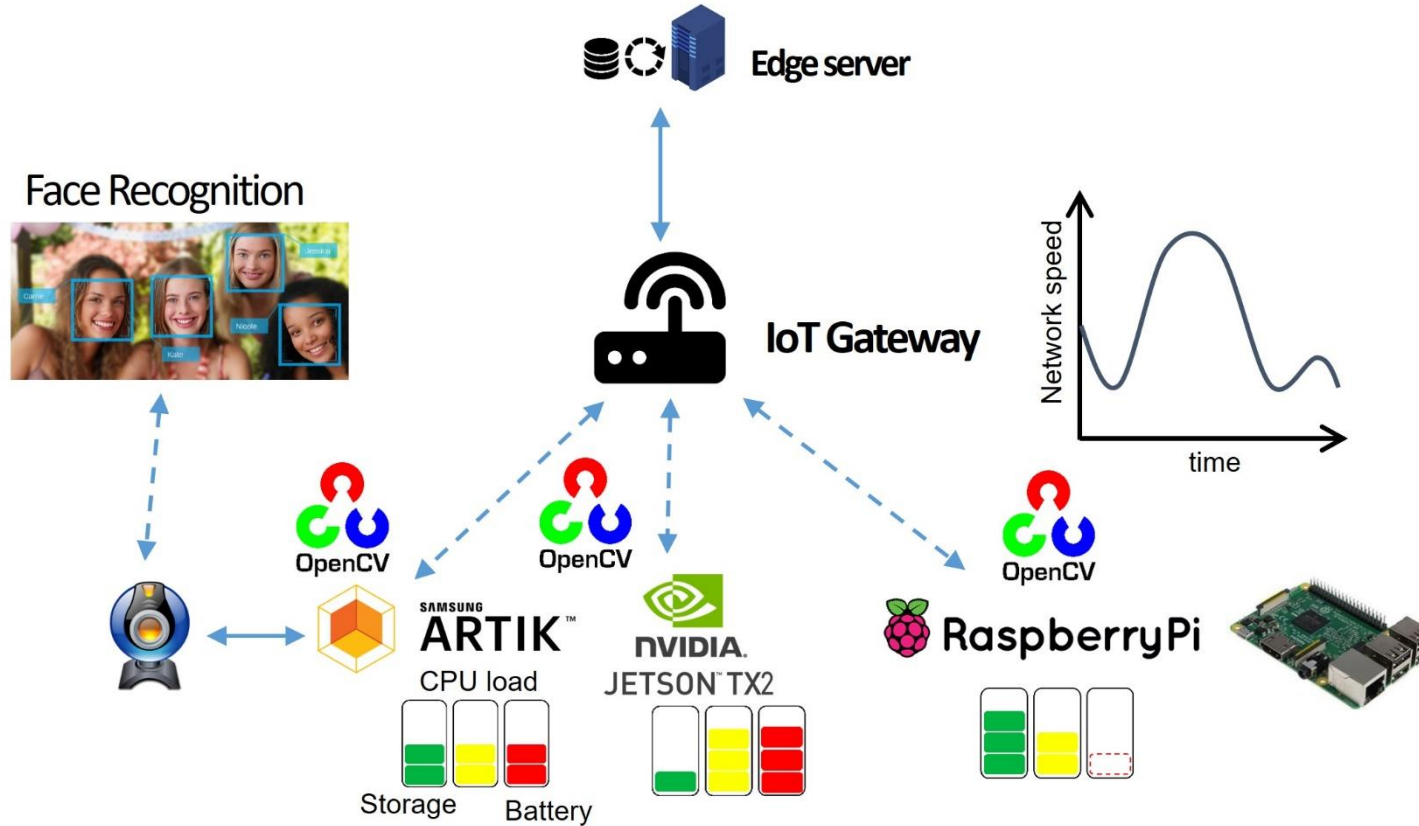
- Dynamic Code/Data Offloading
 - Joint Optimization of Computing/Networking in Mobile Cloud/Edge Systems
 - Processor-Network Speed Scaling in Mobile Device
- Dynamic Server Provisioning
 - Dynamic VM Server Scheduling/Activation
 - Dynamic Pricing Control for Cloud Service

Edge Contents Caching Systems



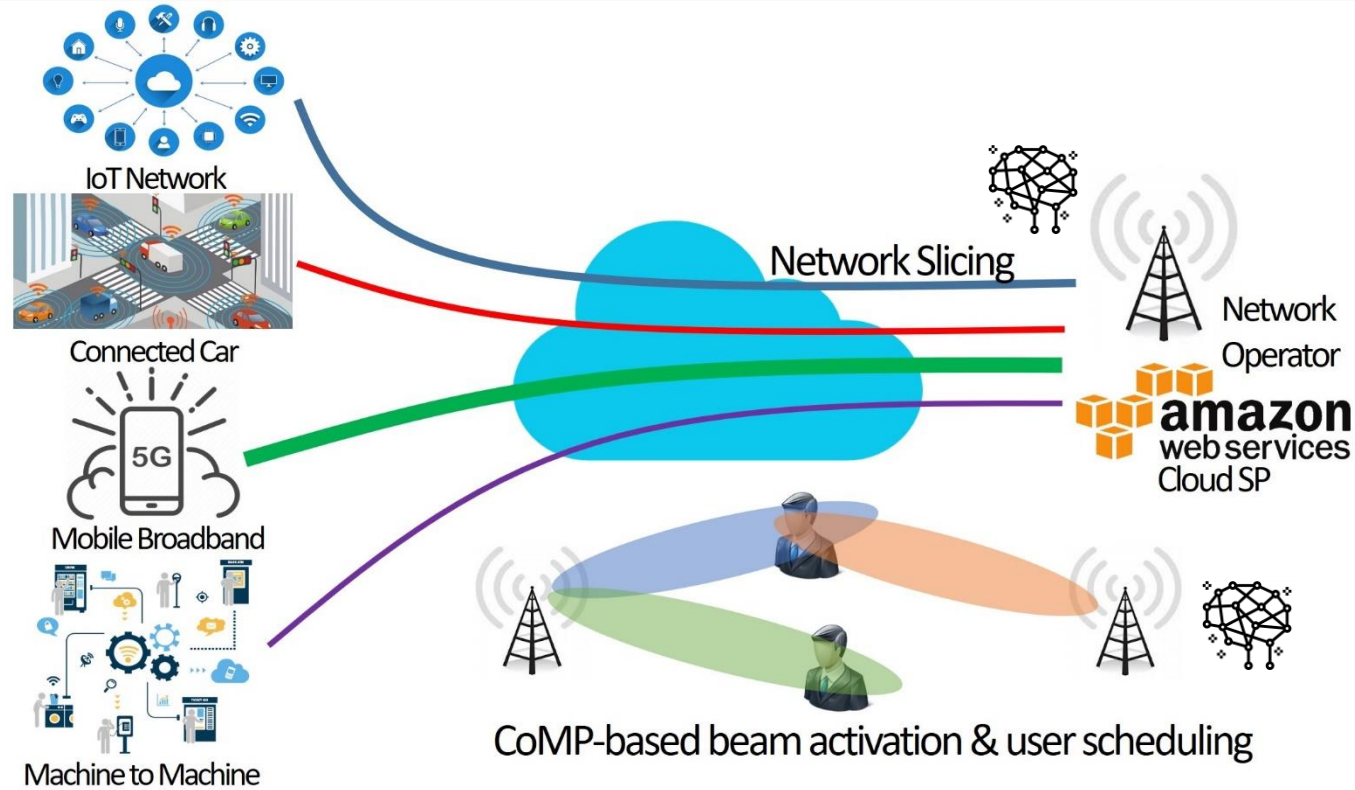
- Elastic Contents Caching
 - Elastic Cache Leasing Systems in Edge Server
 - Real-time Estimation of Popularity using ML
- Joint Optimization of Network & Caching
 - Hierarchical Cloud/Edge Caching
 - Joint Control of Network Routing and Contents Caching

Intelligent Edge IoT Systems



- Multi-Resource IoT Management
 - Compute/Network/Storage/Battery Management of IoT Network Systems
 - Real-Time Artificial Intelligence Systems
- Scalable Learning Orchestration
 - Scalable Learning from Edge to Cloud
 - Federated Learning in Edge Networks

Machine Learning for Communications



- Network Slicing
 - Service Differentiation in SDN/NFV
 - Dynamic Service Chaining using Multi-Resource
- Beamforming in Cooperative Networks
 - CoMP-based Beam Activation & User Scheduling
 - Reinforcement Learning in Multi-Antenna BS

Target Publication Venues

Network Theory	Network System	Mobile and Wireless	Journal
IEEE INFOCOM (End July)	ACM SIGCOMM (End Jan)	ACM MobiCom (Early March)	IEEE Journal on Selected Areas in Communications
ACM SIGMETRICS (Mid Feb, July, Oct)	ACM CoNext (Mid June)	ACM MobiSys (Early Dec)	IEEE Transactions on Mobile Computing
ACM MobiHoc (Mid Jan)	IEEE ICNP (Mid May)		IEEE/ACM Transactions on Networking
IEEE WoWMoM (End Jan)	IEEE SECON (Mid Jan)		IEEE Transactions on Cloud Computing
WiOpt (Early Jan)			IEEE Transactions on Wireless Communications
IEEE GLOBECOM (Mid Mar)			IEEE Transactions on Communications
IEEE ICC (Mid Sep)			IEEE Transactions on Vehicular Technology

Research Group

Intelligent Computing and Networking Lab. (ICNL)

- **Currently, 1 BS, 2 MS, 7 Ph.D. Students (Mar. 2020-) in ICNL**
- **Location of Lab: E3 Building, No. 407, No. 520, No. 421**
- **Current Collaborators**
 - Prof. George Iosifidis, Trinity College Dublin, Ireland (for Elastic Contents Caching Work)
 - Dr. Georgios Paschos, Amazon (for Elastic Contents Caching Work)
 - Prof. Long Bao Le, INRS, Canada (for Cloud Computing & Contents Caching Work)
 - Prof. Kyunghan Lee, Seoul National University (for Elastic Service Placement Work)
 - Prof. Jihwan Choi, KAIST (for Satellite Communications Work)
 - Prof. Yeongjin Kim, Inha University (for Cloud Computing Work)
 - Prof. Hyang-Won Lee, Konkuk University (for Network Slicing Work)
 - Prof. Joohyun Lee, Hanyang University (for Reinforcement Learning Work)

Thank You

ICNL, ICE, DGIST

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