

Kadir Has University 5G and Beyond Research Group Profile

Vision and Objectives

Our vision is to perform cutting edge research and innovation to go beyond the capabilities of the envisioned next generation mobile communications and become a leading institution in 5G and 6G studies using our expertise in wireless communications design.

Our main strategic objectives are participating in the flagship EU projects and contributing to the standardization efforts towards 6G.

Our Expertise

Kadir Has University (KHAS), founded in 1997, is one of the leading mid-size universities in Turkey with 6000 undergraduate, 1000 Master's and PhD students, and more than 400 researchers. With an exceptional academic staff and a wide range of educational opportunities, as well as high levels of cooperation, interaction, and research capabilities coupled with strong international connections and a dedication to development, KHAS attracts new researchers both from Europe and close region. KHAS has significant experience in the management and delivery of EU-funded projects (21 successful partnerships and 8 coordinator roles among 49 project applications until now, mostly in Framework Programs).

As the **5G and Beyond Research Group**, we aim at performing beyond the state of the art in next generation communications with a particular focus, but not limited to, on:

- Communication System Design for 5G and beyond
- Machine-to-Machine Communications
- Visible Light Communications
- Cyber-Physical Systems and Wireless Networked Control Systems
- Wireless Powered Communication Networks
- Spectrum Management

Our group consists of faculty members of Electrical and Electronics Engineering department led by Emeritus Prof. Erdal Panayirci (IEEE Life Fellow) who has an outstanding experience in telecommunications in his pioneering research during last 40 years. Erdal Panayirci (Ph.D., Michigan State University, 71) has an extensive publication record in leading scientific journals, conferences and books with thousands of citations. He conducted several European projects as the principal coordinator, served as editor to IEEE transactions many times as well as organizing IEEE conferences such as ICC, Globecom and PIMRC.

Other team members are Assoc. Prof. Serhat Erkucük and Asst. Prof. Yalcin Sadi:

Serhat Erkucuk (Ph.D., Simon Fraser University, 07) has a 15+ years of experience in conducting research on PHY and MAC layer design of emerging communication systems with recent research focus on the design of 5G systems. His research is funded by NSERC, ERC, TUBITAK, Turk Telekom and ARGELA. He has many papers in high-impact journals and holds international patents. Yalcin Sadi (Ph.D., Koc University, 15) has research interests in wireless communication design and networking for next generation cellular communications, machine-to-machine communications, and sensor networks. His recent studies are funded under TUBITAK Career Development Grant. Scholar profiles of our members are as follows:

Erdal Panayirci: <https://scholar.google.com/citations?user=vAnFULcAAAAJ&hl=en&oi=ao>

Serhat Erkucuk: <https://scholar.google.com/citations?user=pPVB3pcAAAAJ&hl=en&oi=ao>

Yalcin Sadi: <https://scholar.google.com/citations?user=83nbT2gAAAAJ&hl=en&oi=ao>

Recent Successful Projects

- PHY Layer Security for Visible Light Communications, TUBITAK 1003 Programme, 2019-2022, (budget: ~ 1.5M TL)
- Radio Resource Allocation in 5G and Beyond Cellular Networks for M2M Communications, TUBITAK 3501 Programme, 2019-2022, (budget: ~ 360K TL)
- PHY Layer Approaches for 5G System Design, TUBITAK 2219, 2017-2018, (budget: ~ 175K TL)
- Compressed Sensing Based Approaches for the Design of Energy Efficient Communication Systems, TUBITAK 3001, 2014-2017

Topic of Interest

Our main H2020 interest is to participate as a partner in consortia under ICT-52-2020: 5G PPP - Smart Connectivity beyond 5G call which will be open for proposals between 19 Nov 2019 - 22 Apr 2020 with a total budget of 55M Euros, which is the largest among the upcoming calls.

Our Role as a Partner

Our role in a consortium would be related to our expertise listed previously. Specifically, we are aiming at managing at least one work package of applied research and development of solutions for beyond 5G communication systems as follows:

- enabling truly massive machine type communications,
- physical layer security solutions for visible light communications,
- artificial intelligence inspired solutions for the communication system design,
- physical and medium access control layer simulators ready for integration into 5G and IoT testbeds.