School of Computing, Engineering, and the Built Environment
Edinburgh Napier University

PHD STUDENT PROJECT

Application instructions:
Detailed instructions are available at :
https://www.napier.ac.uk/research-and-innovation/doctoral-college/how-to-apply

Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.

Project details

Supervisory Team:
- Director of Study: Dr Naser Ojaroudi Parchin (Email: N.OjaroudiParchin@napier.ac.uk)
- 2ND SUPERVISOR: tbc

Subject Group: Cyber Security and System Engineering

Research Areas: Engineering & Computer Science

Project Title: Phased Array Antenna Systems for MM-Wave/THz Communications

Project description:

With the escalating need for greater data traffic and the proliferation of connected devices, millimeter-wave (mm-Wave) and Terahertz (THz) frequencies have become pivotal elements, opening numerous possibilities in diverse wireless communication scenarios. Advanced antenna systems, such as phased arrays, have transformed wireless connectivity significantly. They facilitate adaptive beamforming, allowing signals to be precisely directed, thereby enhancing both range and reliability with pinpoint accuracy.

The primary objective of this Ph.D. project is to pioneer novel and high-performance phased array antenna systems with multifunctional capabilities tailored for MM-Wave/THz Communications. These designs will be thoroughly assessed using system-level simulation tools like CST, ADS and MATLAB. Additionally, the project will encompass the critical phases of prototyping and laboratory testing, targeting applications in user equipment and base stations.

Candidate characteristics

Education:

A second class honour degree or equivalent qualification in Electrical and Electronic Engineering, or Computer Engineering

Subject knowledge:

- Antenna systems
- Signal Processing
- Beam Steering

Essential attributes:

- Knowledge of Microwave Engineering
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills
- Good time management