DE MONTFORT UNIVERSITY LEICESTER

YOUR CHALLENGES + OUR EXPERTISE = INNOVATIVE SOLUTIONS

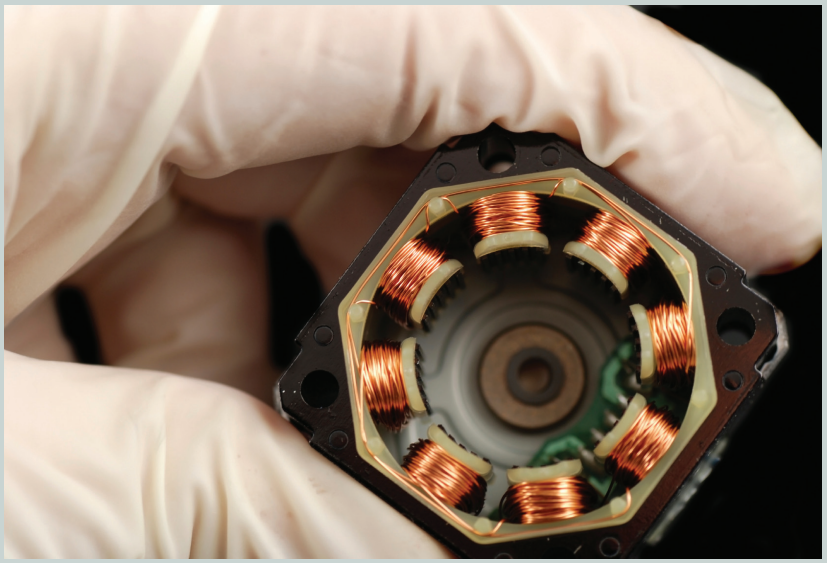
Centre for Electronic and Communications Engineering (CECE)

Offering engineering solutions and multimedia techniques for electronics, communications, healthcare and entertainment

The Centre for Electronic and Communications Engineering (CECE) spans a wide range of diverse areas from semiconductor physics to signal processing. The Centre aims to deliver pure and applied research to satisfy both fundamental research and industry specific (to market ready) knowledge transfer.

Background

The Centre was formally inaugurated in 2011 bringing together the experts in the Department of Engineering working on electronic devices and systems. It is driven by seven academic members of staff supported by research fellows, research assistants and doctoral students.



Expertise

CECE covers a range of electronic and communications areas all linked in the 'value chain' of modern electronic systems:

- Semiconductor device characterisation (includes infra-red thermal microscopy)
- Microwave design
- Electromagnetic compatibility
- Computational and experimental electromagnetics
- Power supply design
- Power systems analysis
- Error control coding
- Video communication systems
- Digital watermarking
- Stereo correspondence matching (for 3D video)
- Digital broadcast systems
- Image and video compression
- Metadata insertion and multimedia content analysis
- Development of digital media products for improved quality of life.

Facilities

The wide spectrum of expertise requires a good base of specialist equipment and the Centre boasts of a number of specialist laboratories with national/international reputations.

- Communications laboratory (CL) this is where much of the research involved with the Multimedia Communications and Signal Processing Group takes place. Work includes network simulations, channel coding, video compression, video transmission, etc.
- Physical Layer Laboratory (PHYlab) this is the home to EMC testing, antenna system design, data cable design and analysis. It shares vector network analyzers, spectrum analyzers and other basic test equipment with the rest of the Centre but houses a 5 x 3 x 2.3 m reverberation chamber, a parallel plate transmission line and a host of equipment for electromagnetic and communications channel testing to various standards. The PHYlab

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is increasingly contributing to International Standards in these areas.

- The Device Thermography and Microwave Laboratory (DTML) houses a state-of-the-art Quantum Focus infra-red (IR) microscope, with the capability extended by a proprietary IR micro-sensor technology. Research and commercial work is undertaken in thermal mapping all types of electronic devices (MEMS, MMIC, PHOTONIC, DISRETE etc) including devices for high reliability satellite applications. Microwave design and characterisation work is also undertaken to THz frequencies. The Laboratory was recently a co-recipient of an award to acknowledge the high quality of its work in satellite communications.
- The Power Electronics Laboratory (PEL) has a focus on the electrical management of renewable and small scale power generation systems, particularly photo-voltaics.
- The Fused Media Laboratory (FML) concentrates on 3D media capture, production, visualisation, interaction and navigation as well as mixed and augmented reality, and fused multimodal interactions.

Key Collaborations

The Centre has much collaboration with industry and academia around the world.

Academic

- Nottingham University
- Manchester University
- Liverpool University
- Loughborough University
- University of Leicester
- Polytechnic University of Barcelona
- Ghent University
- University of L'Aquila
- Oklahoma State University
- Southern Methodist University
- Harbin Institute of Technology
- University of Aachen
- Bristol University
- Cambridge University
- Sheffield University
- Aberdeen University
- University of Strathclyde

- Swiss Federal Institute of Technology of Lausanne
- Texas A&M University
- Telecom Bretagne

<mediatag> Keep it - Find it - Use it

- MediaTag is a spin-out company of the Centre that provides automated metadata insertion services.

Industrial

- IBM (USA)
- ANDRO Computational Solutions
- Filtronic Broadband
- RFMD (USA)
- e2v

Contact

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