

REAL WORLD
SOLUTIONS

Computer Science

- Digital Forensics Science
- Nature Inspired Computing Optimisation
- Computer Science Education Didactics and Applications Research
- Computational Intelligence
- Data Science for Social Impact
- System Specifications and Formal Methods



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Digital Forensic Science (DIGIFORS)

DigiForS's undertakes research in Digital Forensic Science and its main objective is to find innovative security solutions for state-of-the-art technologies.

This includes finding solutions that will help to make emerging technologies safe for use, using security technologies to enable new applications, find solutions that will better protect existing technology, as well as extracting forensically relevant information for digital forensic investigation.

- Digital Forensics
- Cybersecurity
- Distributed Trust
- Digital Forensic Readiness
- Digital Policing
- Digital Forensic Investigations

Computer Science Education Didactics and Applications Research (CSEDAR)

CSEDAR concentrates on good teaching strategies and the development of software that is research based within the discipline of Computer Science.

We believe that Computer Science education is a distinct subset of the conventional educational paradigm and has been neglected in the past. Computer Science is a complex discipline being both artistic and scientific in nature resulting in a need for Computer Science focused education research.

- Software development for education
- Educational Software evaluation
- Teaching Computer Science, includes assessment, teamwork.
- Computer Science curricula and accreditation
- Learning Analytics

Nature Inspired Computing Optimisation (NICOG)

The NICOG research group focuses on solving real-world problems using machine learning and optimisation techniques that take analogies from nature such as genetic algorithms and neural networks.

- Genetic Programming
- Hyper-heuristics
- Biologically-inspired
- Automated design of machine learning and search techniques
- Digital Policing
- Digital Forensic Investigations

Computational Intelligence (CIRG)

The Computational Intelligence Research Group (CIRG) focuses on various aspects of fundamental and applied computational intelligence and machine learning research. Nature-inspired algorithms

- Artificial Neural Networks
- Deep Learning
- Evolutionary Computing
- Machine Learning
- Digital Policing
- Self-organising maps

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Data Science for Social Impact (DSFSI)

Our general areas of work straddle Data Science for Society as well as Local Language Natural Language Processing. These two strands are complementary. Our work in Data Science and Society has allowed us to have a more nuanced approach to understanding the systematic challenges that face being able to do excellent science with local languages. Through Data Science for Society, we have to understand how when one carries through Data Science research, we situate how the users are part of the process. We find that we need to adjust our research to take care of these challenges and innovate in ways we gather direct data or alternative data.

- Natural Language Processing
- Machine Learning
- Social Media
- Society
- Web Technologies

System Specifications and Formal Methods (SSFM)

The SSFM research group investigates theoretical aspects of software and computational systems for the sake of practical benefits such as systems quality and reliability.

- Formal Specifications of Systems
- Theoretical and Methodological Foundations of System Specifications
- Tool Support for Formal Methods
- Meta-Informatics and Philosophy of Computer Science

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