

Interdisciplinary Centre for the Artificial Mind (iCAM)

RESEARCH PROFILE

The Centre's focus is on the whole lifespan in neurocognitive development.

First, it is important to understand mind functioning in everyday development over an entire lifespan through a strong theoretical background including fundamental research for example, multimodal interactions analysis which integrates verbal with non-verbal communication.

Second, it is important to analyse how neurocognitive development occurs when immersed in virtual / augmented reality and in interaction with robots (e.g. spatial navigation, body consciousness, enrobotment).

Third, it is necessary to study neurodevelopmental disorder including Autism Spectrum Disorder, prematurity or after a head injury, or a stroke, and through neuroeducation using virtual / augmented reality and robots (e.g mobile toy robots, modular whole body exoskeleton, ecological AR / RV environments).

The centre's aim is to translate neuroeducation into therapeutic methods through collaborations with clinical investigators. Patent development is a longer-term ambition of the centre.

2019 HIGHLIGHTS

PUBLICATIONS

Noori-Hoshyar A., Samali B., Liyanapathirana R., Nouri Houshyar A., Yu Y., (2019) Structural Damage Detection and Localization Using a Hybrid Method and Artificial Intelligence Techniques, Structural Health Monitoring. (post-doc work)

Marty, B., Naeije, G., Bourguignon, M., Wens, V., Jousmäki, V., Lynch, D. R., Gaetz, W., Goldman, S., Hari, R., Pandolfo, M., De Tiège, X. (2019). Evidence for genetically determined degeneration of proprioceptive tracts in Friedreich ataxia. *Neurology* 93(2): e116-e124. (post-doc work)

Frangos, A., Lee, T.J., To, D., & Giannopulu, I. (2019). Ventral and Dorsal Pathways Implications in an Augmented Reality Environment. *IEEE, VR. Conference on Virtual Reality and 3D User Interfaces*, eCF Paper Id: 382053. (honours student work)

Kajal, P., Stotter, J. & Giannopulu, I. (2019). Neural Implications of Emotional Imagery. *The 9th Conference of the Australasian Cognitive Neuroscience Society*. (honours student work)

International workshop organisation *IEEE VR 2019: NeuroVirt: Neuroscience and Virtuality* (March 23, 2019), Osaka, Japan

CENTRE STAFF

PROFESSOR IRINI GIANNOPULU

Irini Giannopulu's research is an inter-disciplinary one and on the use of artificial environments both robots and virtual/augmented reality in synergy with brain development across the lifespan. She conducts research into visuo-vestibular and somesthetic interactions in real and virtual spatial navigation. She analyses how atypical populations those with neurodevelopment disorders, i.e. ASD children, develop once in contact with robots.

DR DAMIAN COX

Damian is a Philosopher whose research covers theories of ethics and philosophy of film.

In ethics, Damian works in virtue ethics - the study of virtues and the attempt to develop a moral theory (e.g. a theory of right and wrong action) in terms of virtues and virtue-concepts. Damian has written on individual virtues, most notably integrity, as well as the prospects of a theory of ethics based on virtues.

DR MARK BAHR

Mark is a psychologist whose research is focused on lifespan development psychology , in recent years it has been focused on age related decline.

DR OLIVER BAUMANN

Oliver is an experimental psychologist and cognitive neuroscientist using a combination of human behavioural testing and functional neuroimaging. The focus of his research has been on how sensory information is coded in memory to support effective navigation. Oliver joined the Interdisciplinary Centre for the Artificial Mind at Bond University to investigate human-artificial environment interaction with the aim to provide preventive solutions for human health disorders.

DR AZADEH NOORI-HOSHYAR (POST-DOC)

Her research interest includes image processing, signal processing, machine learning and software development (Agile). More recently she has focused on AI-based preventive methods for structural failure. Dr. Noori has been involved in several projects in Structural Health Monitoring (SHM) and Biomedical Engineering (Automatic Cancer Detection).

DR BRICE MARTY (POST-DOC)

Brice is a neuroscientist with expertise in experimental design and data processing.

DR AUDE ETOURNAUD

Aude is a clinical researcher in psychology. Aude investigated best practice intervention models for delivering group-based support to parents of children with Autism Spectrum Disorder (ASD), as part of her PhD.

