

Department of Engineering:
Projects available for prospective CSC Studentship applicants

Project Title: Use of construction and demolition waste in 3D concrete printing of structures

Lead Supervisor: Akbar Javadi

Second Supervisor: Farhad Namdari

Contact mail for project enquiries: a.a.javadi@exeter.ac.uk

Project Title: Disordered synthetic metasurface for solar energy harvesting

Lead Supervisor: Changxu Liu

Second Supervisor: Jensen Li

Contact mail for project enquiries: c.c.liu@exeter.ac.uk

Project Title: Self-Powered Smart Orthopaedic Implants Featuring Tribological Optimisation and Wireless Connectivity

Lead Supervisor: Dong Wang

Second Supervisor: Meiling Zhu

Contact mail for project enquiries: d.wang2@exeter.ac.uk

Project Title: Design and development of an AI-enhanced ultrasonic tank cleaning system

Lead Supervisor: Dong Wang

Second Supervisor: Xinjin Hua

Contact mail for project enquiries: d.wang2@exeter.ac.uk

Project Title: Green Hydrogen via Agrivoltaic and Floating Solar: A Worldwide Techno-Economic Perspective for Building & Transport

Lead Supervisor: Dr Aritra Ghosh

Second Supervisor: N/A

Contact mail for project enquiries: a.ghosh@exeter.ac.uk

Project Title: Physics-Informed AI-based Energy Management of Clean Energy Systems

Lead Supervisor: Dr Gianmario Rinaldi

Second Supervisor: N/A

Contact mail for project enquiries: G.Rinaldi3@exeter.ac.uk

Project Title: Engineering Rare-Earth-Inspired Materials for Sustainable Energy

Lead Supervisor: Dr Habib Ullah

Second Supervisor: Prof Shaowei Zhang

Contact mail for project enquiries: hu203@exeter.ac.uk

Project Title: Nonlinear Mechanics of Graded-Stiffness Thin-Walled Structures for Next-Generation Offshore Wind Turbine Blades

Lead Supervisor: Dr Jiajia Shen

Second Supervisor: Prof Oana Ghita

Contact mail for project enquiries: j.shen3@exeter.ac.uk

Project Title: Programmable Shape-Morphing of Auxetic Metamaterials for Sustainable Construction

Lead Supervisor: Dr Jiajia Shen

Second Supervisor: Prof Ken E. Evans

Contact mail for project enquiries: j.shen3@exeter.ac.uk

Project Title: Smart auxetic materials with dynamically tunable viscoelastic response for superior damping.

Lead Supervisor: Dr Julian M Londono Monsalve

Second Supervisor: Prof. Ken Evans

Contact mail for project enquiries: J.Londono-Monsalve@exeter.ac.uk

Project Title: Integrated Wireless Sensor Network and Enhanced Algorithm Solution for Operational Modal Analysis in Structural Health Monitoring

Lead Supervisor: Dr Ki Young Koo

Second Supervisor: Prof. Prakash Kripakaran

Contact mail for project enquiries: k.y.koo@exeter.ac.uk

Project Title: Integrated Simulation of Multi-modal Transport Links in Port Operations: Discrete Event Simulation approach to model interactions between sea, rail, and road transport.

Lead Supervisor: Dr Martino Luis

Second Supervisor: Professor Ion Sucala

Contact mail for project enquiries: m.luis@exeter.ac.uk

Project Title: Smart Seas: Digital Twins for Smarter Shipping Logistics and Freight Management Route planning and scheduling

Lead Supervisor: Dr Martino Luis

Second Supervisor: Dr Natalia Hartono

Contact mail for project enquiries: m.luis@exeter.ac.uk

Project Title: Circular Maritime Supply Chains: Remanufacturing for Net-Zero Shipping

Lead Supervisor: Dr Natalia Hartono

Second Supervisor: Dr Martino Luis

Contact mail for project enquiries: n.hartono@exeter.ac.uk

Project Title: Development of 3D auxetic-hybrid geometries for their use in the construction sector.

Lead Supervisor: Dr Raffaele Vinai

Second Supervisor: Prof Ken Evans, Prof Prakash Kripakaran

Contact mail for project enquiries: r.vinai@exeter.ac.uk

Project Title: Integrated Wireless Optogenetics and on-demand Drug Delivery for Targeted Neuromodulation in Neurological Disorders

Lead Supervisor: Dr Rupam Das

Second Supervisor: Prof Yang Liu

Contact mail for project enquiries: r.k.das@exeter.ac.uk

Project Title: Biomechanically-informed development of a Knee Exoskeleton through neuromusculoskeletal modeling

Lead Supervisor: Dr Xijin Hua

Second Supervisor: Professor Tim Holsgrove; Professor Dominic Farris

Contact mail for project enquiries: x.hua@exeter.ac.uk

Project Title: Artificial intelligence-driven design and fatigue life prediction of 3D printed bone scaffolds

Lead Supervisor: Dr Xijin Hua

Second Supervisor: Dr Dong Wang; Professor Ken Evans

Contact mail for project enquiries: x.hua@exeter.ac.uk

Project Title: Li⁺-selective membrane based electrochemical lithium extraction

Lead Supervisor: Dr Zhenyu Zhang

Second Supervisor: Prof Rich Crane

Contact mail for project enquiries: zhenyu.zhang@exeter.ac.uk

Project Title: AI-Driven Digital Transformation for Power Systems

Lead Supervisor: Dr. Dawei Qiu

Second Supervisor: Prof. Zhong Fan

Contact mail for project enquiries: d.qiu@exeter.ac.uk

Project Title: Multi-material 3D printing for porous structures

Lead Supervisor: Dr. Jingchao Jiang

Second Supervisor: Ion Sucala

Contact mail for project enquiries: j.jiang2@exeter.ac.uk

Project Title: Advanced sensing for defect-free metal additive manufacturing

Lead Supervisor: Dr. Julian M Londono Monsalve

Second Supervisor: N/A

Contact mail for project enquiries: J.Londono-Monsalve@exeter.ac.uk

Project Title: AI and IoT driven Smart Wireless Sensor Network for Structural Health Monitoring of Civil Infrastructures

Lead Supervisor: Dr. Ki Young Koo

Second Supervisor: Prof. Prakash Kripakaran

Contact mail for project enquiries: k.y.koo@exeter.ac.uk

Project Title: Mathematical Modeling of Complex Systems with an Emphasis on Evolutionary Biology

Lead Supervisor: Hussein Rappel

Second Supervisor: David Hosken

Contact mail for project enquiries: h.rappel@exeter.ac.uk

Project Title: Real-time uncertainty quantification for nonlinear/bifurcating systems

Lead Supervisor: Hussein Rappel

Second Supervisor: -

Contact mail for project enquiries: h.rappel@exeter.ac.uk

Project Title: Probabilistic Physics-Informed 3D Reconstruction of Underwater Scenes

Lead Supervisor: Hussein Rappel

Second Supervisor: Gavin Tabor

Contact mail for project enquiries: h.rappel@exeter.ac.uk

Project Title: Scattering from Spatiotemporally Modulated Wave Materials

Lead Supervisor: Jensen Li

Second Supervisor: Simon Horsley

Contact mail for project enquiries: j.li13@exeter.ac.uk

Project Title: Towards emerging Industry 5.0: simulation modelling for sustainable, human-centric and resilient industries

Lead Supervisor: Malarvizhi Kaniappan Chinnathai

Second Supervisor: Dr Martino Luis

Contact mail for project enquiries: m.kaniappan-chinnathai@exeter.ac.uk

Project Title: Digital twins of advanced low carbon flexible composite.

Lead Supervisor: Maria Rosaria Marsico

Second Supervisor: Dr Julian Londono

Contact mail for project enquiries: m.r.marsico@exeter.ac.uk

Project Title: Self-Sustainable IoT through High-Performance Energy Harvesting

Lead Supervisor: Meiling Zhu

Second Supervisor: NA

Contact mail for project enquiries: m.zhu@exeter.ac.uk

Project Title: Multi-Domain Sensing and Spectroscopy with 2D Single-Pixel Detectors

Lead Supervisor: Monica Craciun

Second Supervisor: Saverio Russo

Contact mail for project enquiries: m.f.craciun@exeter.ac.uk

Project Title: Automating concrete construction through digital design, deployable formworks and 3D printing

Lead Supervisor: Prakash Kripakaran

Second Supervisor: Dr. Lele Vinai

Contact mail for project enquiries: p.kripakaran@exeter.ac.uk

Project Title: Uncertainty Quantification in Computational Fluid Dynamics

Lead Supervisor: Prof Gavin Tabor

Second Supervisor: Dr Hussein Rappel

Contact mail for project enquiries: g.r.tabor@exeter.ac.uk

Project Title: 2D Hybrid Metasurfaces for Nanoscale Nuclear Magnetic Resonance

Lead Supervisor: Prof Isaac Luxmoore

Second Supervisor: Dr Changxu Liu

Contact mail for project enquiries: i.j.luxmoore@exeter.ac.uk

Project Title: Sustainable Artificial Intelligence: A whole systems assessment of the net environmental impacts of AI

Lead Supervisor: Prof Xiaoyu Yan

Second Supervisor: Prof Chunbo Luo

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Project Title: Dynamical systems based environmental and socio-economic sustainability appraisal of net zero transition pathways

Lead Supervisor: Prof Xiaoyu Yan

Second Supervisor: Prof Jean-Francois Mercure

Contact mail for project enquiries: xiaoyu.yan@exeter.ac.uk

Project Title: Informing sustainable investing through firm level environmental performance assessment

Lead Supervisor: Prof Xiaoyu Yan

Second Supervisor: Prof Chendi Zhang

Contact mail for project enquiries: Xiaoyu.yan@exeter.ac.uk

Project Title: Integrating tipping points into life cycle assessment to identify effective interventions for reducing environmental impacts across supply chains at different scales

Lead Supervisor: Prof Xiaoyu Yan

Second Supervisor: Prof Tim Lenton

Contact mail for project enquiries: Xiaoyu.yan@exeter.ac.uk

Project Title: Human health impacts of the global net zero transition

Lead Supervisor: Prof Xiaoyu Yan

Second Supervisor: Prof Tim Taylor

Contact mail for project enquiries: Xiaoyu.yan@exeter.ac.uk

Project Title: Collagen Ultrastructure: A New Frontier in the Diagnosis and Intervention of Joint Degeneration

Lead Supervisor: Prof. Junning Chen

Second Supervisor: Mary O'Leary

Contact mail for project enquiries: j.chen3@exeter.ac.uk

Project Title: Flexible Sensing Composites for smart and low carbon cities

Lead Supervisor: Prof. Maria Rosaria Marsico

Second Supervisor: Prof. Monica Craciun

Contact mail for project enquiries: m.r.marsico@exeter.ac.uk

Project Title: Experimental and Numerical Modelling of Microplastics transport in Rivers
Lead Supervisor: Prof. Prakash Kripakaran
Second Supervisor: Dr Diego Panici
Contact mail for project enquiries: p.kripakaran@exeter.ac.uk

Project Title: Physics-informed machine learning for structural health monitoring
Lead Supervisor: Prof. Prakash Kripakaran
Second Supervisor: Prof. Chunbo Luo
Contact mail for project enquiries: p.kripakaran@exeter.ac.uk

Project Title: Optimising large-format 3D printed High-Performance Polymer Joints: Interaction of Structure, Material and Manufacturing
Lead Supervisor: Prof. Prakash Kripakaran
Second Supervisor: Dr. Jiajia Shen
Contact mail for project enquiries: p.kripakaran@exeter.ac.uk

Project Title: Effect of highly concentrated light on BaSnO₃ based Perovskites Solar Cell
Lead Supervisor: Prof. Tapas Mallick
Second Supervisor: Asif Tahir
Contact mail for project enquiries: t.k.mallick@exeter.ac.uk

Project Title: Development of a Smart, sustainable, and affordable 3D-printed knee orthosis
Lead Supervisor: Professor Akbar Javadi
Second Supervisor: Dr Xijin Hua
Contact mail for project enquiries: A.A.Javadi@exeter.ac.uk

Project Title: From Equations to Intelligence; Merging Machine Learning and Physics for Computational Fluid Dynamics
Lead Supervisor: Professor Gavin Tabor
Second Supervisor: Dr Xu Chu
Contact mail for project enquiries: g.r.tabor@exeter.ac.uk

Project Title: Advanced methods of non-destructive inspection and signal processing of power transmission lines
Lead Supervisor: Professor Mustafa Aziz
Second Supervisor: Professor Zhong Fan
Contact mail for project enquiries: M.M.Aziz@exeter.ac.uk

Project Title: GPU accelerated computational electromagnetics of coupled magnetic nanostructures

Lead Supervisor: Professor Mustafa Aziz

Second Supervisor: Professor Yanqiu Zhu

Contact mail for project enquiries: M.M.Aziz@exeter.ac.uk

Project Title: Advanced non-destructive testing and signal processing of power transmission lines

Lead Supervisor: Professor Mustafa Aziz

Second Supervisor: Professor Zhong Fan

Contact mail for project enquiries: M.M.Aziz@exeter.ac.uk

Project Title: Probing Cartilage Failure: Linking Cellular Mechanotransduction to Tissue Injury using a next-generation six-axis bioreactor

Lead Supervisor: Professor Timothy Holsgrove

Second Supervisor: Professor Junning Chen

Contact mail for project enquiries: t.holsgrove@exeter.ac.uk

Project Title: The effect of exposure to whole-body vibration on the mechanobiology of the intervertebral disc

Lead Supervisor: Professor Timothy Holsgrove

Second Supervisor: Genevieve Williams

Contact mail for project enquiries: t.holsgrove@exeter.ac.uk

Project Title: Nature-inspired robot for medical intervention

Lead Supervisor: Professor Yang Liu

Second Supervisor: Professor Aureliu Lavric

Contact mail for project enquiries: y.liu2@exeter.ac.uk

Project Title: Plant-inspired Growing Robot for Medical Intervention

Lead Supervisor: Professor Yang Liu

Second Supervisor: Dr Jingchao Jiang

Contact mail for project enquiries: y.liu2@exeter.ac.uk

Project Title: Buckling-induced auxetic geometries for deployable structures.

Lead Supervisor: Raffaele Vinai

Second Supervisor: Prof Ken Evans; Prof Prakash Kripakaran

Contact mail for project enquiries: r.vinai@exeter.ac.uk

Project Title: Numerical modelling of structural concrete durability under multi-modal degradation effects.

Lead Supervisor: Raffaele Vinai

Second Supervisor: Prof Prakash Kripakaran

Contact mail for project enquiries: r.vinai@exeter.ac.uk

Project Title: Machine learning for predictive asset management in water systems

Lead Supervisor: Raziye Farmani

Second Supervisor: TBC

Contact mail for project enquiries: r.farmani@exeter.ac.uk

Project Title: Distributed fibre optic sensing for water asset health prediction

Lead Supervisor: Raziye Farmani

Second Supervisor: TBC

Contact mail for project enquiries: r.farmani@exeter.ac.uk

Project Title: Design and Development of Novel Materials for Aqueous Zinc-Based Energy Storage

Lead Supervisor: Rong Lan

Second Supervisor: Prof. Xiaohong Li

Contact mail for project enquiries: r.lan@exeter.ac.uk

Project Title: Electrochemical Synthesis of Sustainable Aviation Fuels Using Renewable Electricity and Biomass-derived Feedstocks

Lead Supervisor: Rong Lan

Second Supervisor: Xiaohong Li

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Project Title: Synthesis and Characterisation of Low Carbon Cement

Lead Supervisor: Shaowei Zhang

Second Supervisor: Yanqiu Zhu

Contact mail for project enquiries: s.zhang@exeter.ac.uk

Project Title: Additive Manufacturing of Porous Ceramics

Lead Supervisor: Shaowei Zhang

Second Supervisor: Oana Ghita

Contact mail for project enquiries: s.zhang@exeter.ac.uk

Project Title: Security and Stability Enhancement for Integrated AC–MTDC Onshore-Offshore Transmission Systems

Lead Supervisor: Shuhang Shen

Second Supervisor: Farhad Namdari

Contact mail for project enquiries: s.shen@exeter.ac.uk

Project Title: Robust Grid-Forming Control of Offshore Wind Farms

Lead Supervisor: Shuyue Lin

Second Supervisor: Saptarshi Das

Contact mail for project enquiries: S.Lin@exeter.ac.uk

Project Title: AI-Enhanced Control of Wind Power Grid Integration

Lead Supervisor: Shuyue Lin

Second Supervisor: Saptarshi Das

Contact mail for project enquiries: S.Lin3@exeter.ac.uk

Project Title: Black Start and Restoration Using Grid-Forming Renewable Energy Resources

Lead Supervisor: Shuyue Lin

Second Supervisor: Zhenyu Zhang

Contact mail for project enquiries: S.Lin3@exeter.ac.uk

Project Title: Beyond green design: a bio-inspired generative framework for absolute sustainability

Lead Supervisor: Wei Zhang

Second Supervisor: Natalia Hartono

Contact mail for project enquiries: W.Zhang5@exeter.ac.uk

Project Title: Bio-inspired sustainable generative design for impact absorption

Lead Supervisor: Wei Zhang

Second Supervisor: Meiling Zhu

Contact mail for project enquiries: W.Zhang5@exeter.ac.uk

Project Title: Development of Novel AEM Water Electrolyser Cell for Hydrogen Production for Energy Storage

Lead Supervisor: Xiaohong Li

Second Supervisor: Dr Chunbo Luo

Contact mail for project enquiries: x.li@exeter.ac.uk

Project Title: Development of novel electrode materials for zinc-nickel redox flow battery for grid scale energy storage

Lead Supervisor: Xiaohong Li

Second Supervisor: Dr Rich Crane

Contact mail for project enquiries: x.li@exeter.ac.uk

Project Title: Artificial intelligence-driven design and fatigue life prediction of 3D printed bone scaffolds

Lead Supervisor: Xijin Hua

Second Supervisor: Dr Dong Wang; Professor Ken Evans

Contact mail for project enquiries: x.hua@exeter.ac.uk

Project Title: Large language model and Agentic-AI for engineering

Lead Supervisor: Xu Chu

Second Supervisor: Gavin Tabor

Contact mail for project enquiries: x.chu@exeter.ac.uk

Project Title: Anti-corrosion coating

Lead Supervisor: Yanqiu ZHU

Second Supervisor: Yongde XIA

Contact mail for project enquiries: y.zhu@exeter.ac.uk

Project Title: High-Entropy MXene-based Nanocomposites for Energy Storage and Conversions

Lead Supervisor: Yongde Xia

Second Supervisor: Prof. Yanqiu Zhu

Contact mail for project enquiries: y.xia@exeter.ac.uk

Project Title: Temperature Regulation Using Thermal Energy Harvesting

Lead Supervisor: Zheng Jun Chew

Second Supervisor: Ievgeniia Kovalska

Contact mail for project enquiries: z.j.chew@exeter.ac.uk

Project Title: Sewer condition monitoring powered by energy harvesting

Lead Supervisor: Zheng Jun Chew

Second Supervisor: Guangtao Fu

Contact mail for project enquiries: z.j.chew@exeter.ac.uk

Project Title: Sustainable Materials for All-Solid-State Lithium-Ion Battery

Lead Supervisor: Zhenyu Zhang

Second Supervisor: Prof. Xiaohong Li

Contact mail for project enquiries: zhenyu.zhang@exeter.ac.uk

Project Title: Lean language models for energy system planning, operation and control

Lead Supervisor: ZHONG FAN

Second Supervisor: DR DAWEI QIU

Contact mail for project enquiries: z.fan@exeter.ac.uk

Project Title: Distributed machine learning for non-intrusive load monitoring

Lead Supervisor: Zhou Zhou

Second Supervisor: Dr Fanlin Meng

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