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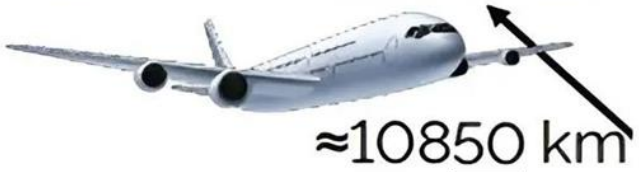
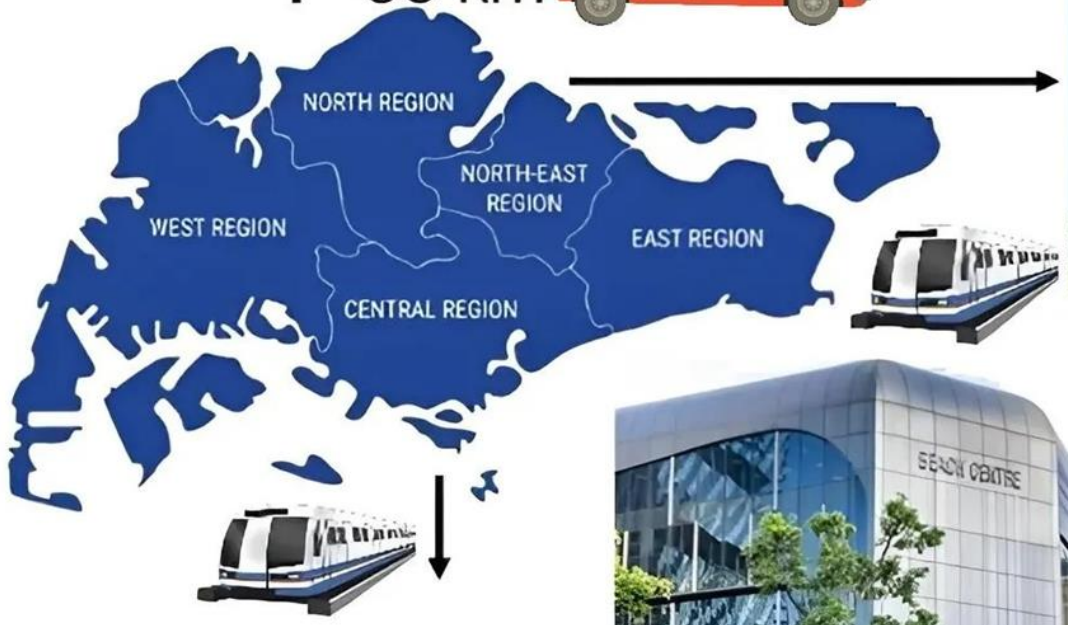
- **Electrical Power Engineering**
- **Marine Technology**
- **Mechanical Engineering**

Where we are





NU,SINGAPORE

People in Newcastle University in Singapore

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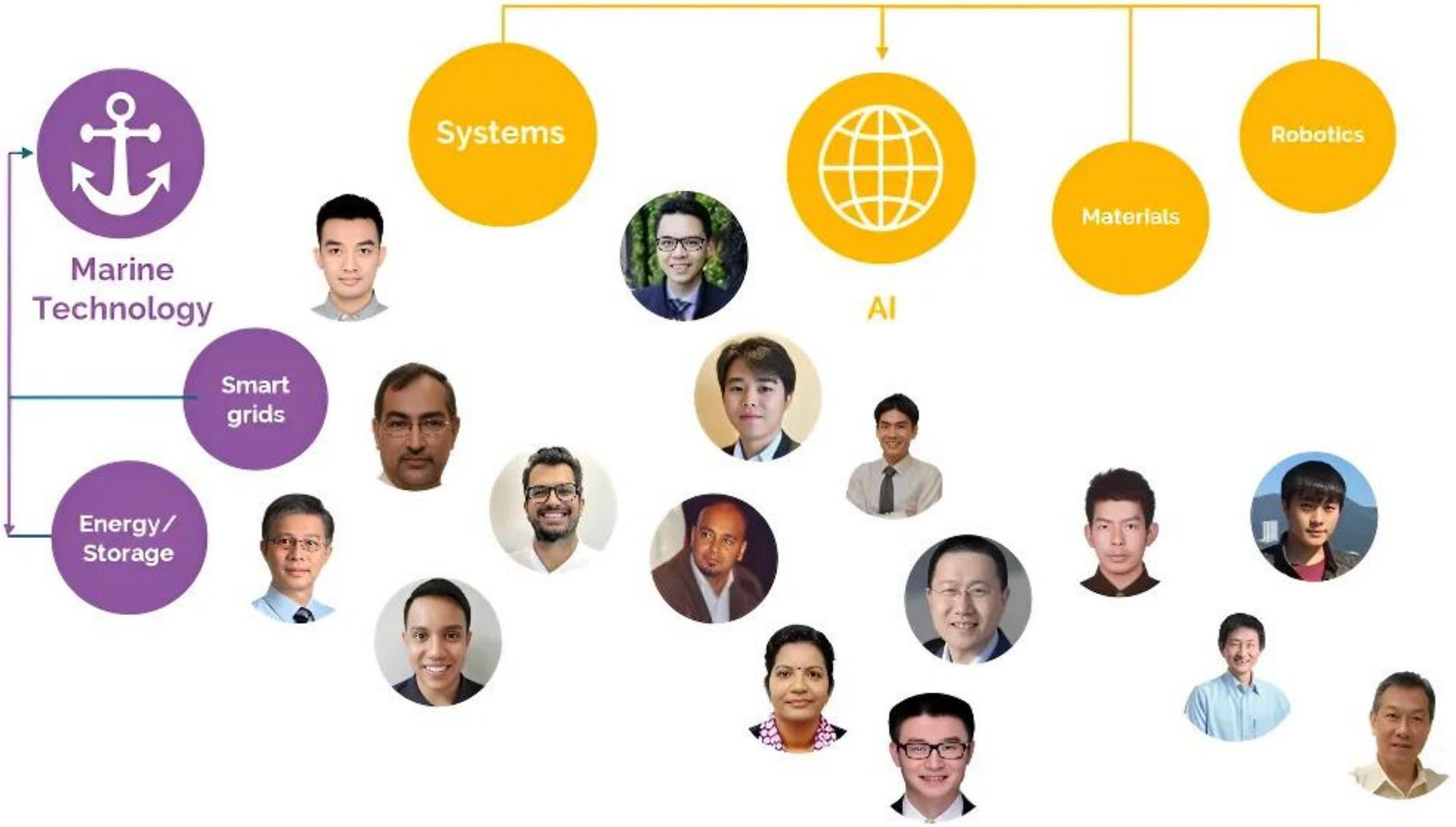

~30 PhD students + 16 academic staff

Research Focus in Newcastle University in Singapore

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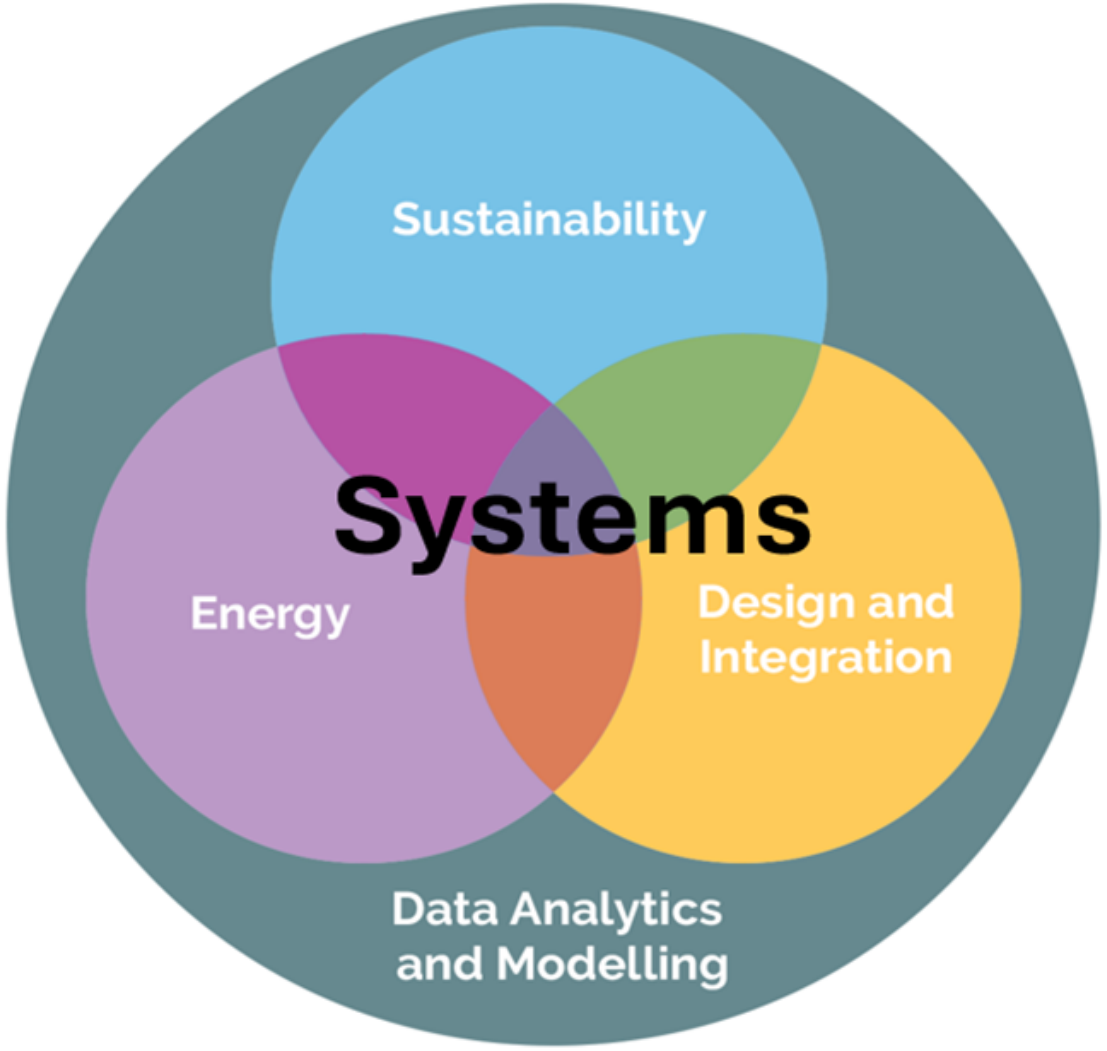

- **Control and Monitoring**
- Renewable Energy, **Energy Storage (battery, fuel cell) and Integration**
- **Intelligent Systems** (Machine Learning and Artificial Intelligence)

- **Composite Materials**

- Power Mechanical, Design and System Integration
- **Robotic**
- Ships & Offshore Structure Design

- **Smart Grids**
- Electrical Network Cyber Resilience
- **Digital Twin Technology**

- Sustainable Process and Design
- Sustainable Shipping

- Materials, Design, Manufacturing, Repair and Recycling
- Biomaterials and Biomedical Processes
- Ship Production and Repairing
- **Hydrodynamics and Simulation**

- **Power Electronics and Engineering**

Research Grants: Enterprise Singapore/Economic Development Board Industrial Postgraduate Programme (IPP)

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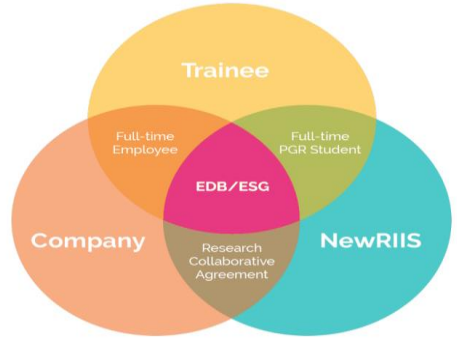
- The Industrial Postgraduate Programme (IPP), launched by the Singapore Economic Development Board (EDB), aims to cultivate a pool of postgraduate talent in Singapore equipped with essential R&D skills. This is achieved through training in corporate R&D environments and local universities.
- Upon completing the program, graduates have successfully transitioned into R&D roles within the industry, as shown.



Enterprise Singapore

AEM

GLOBAL FOUNDRIES

ENGIE

EDB SINGAPORE

DNV

xylem

sembcorp

gsk

SOLIS MARINE ENGINEERING

NVIDIA

Lloyd's Register

Nestlé

SEAGATE

cetim Matcor

Learn more:

1. Using AI to predict psychoacoustic annoyance caused by long-term laptop use
2. How our Singapore campus is tackling Climate Change with AI
3. Could digitalisation manage Singapore's water?
4. Using AI to design offshore accommodation and workspaces with lower noise levels
5. Tackling corrosion with digital twinning
6. Smart microgrid research with industry partners in Singapore

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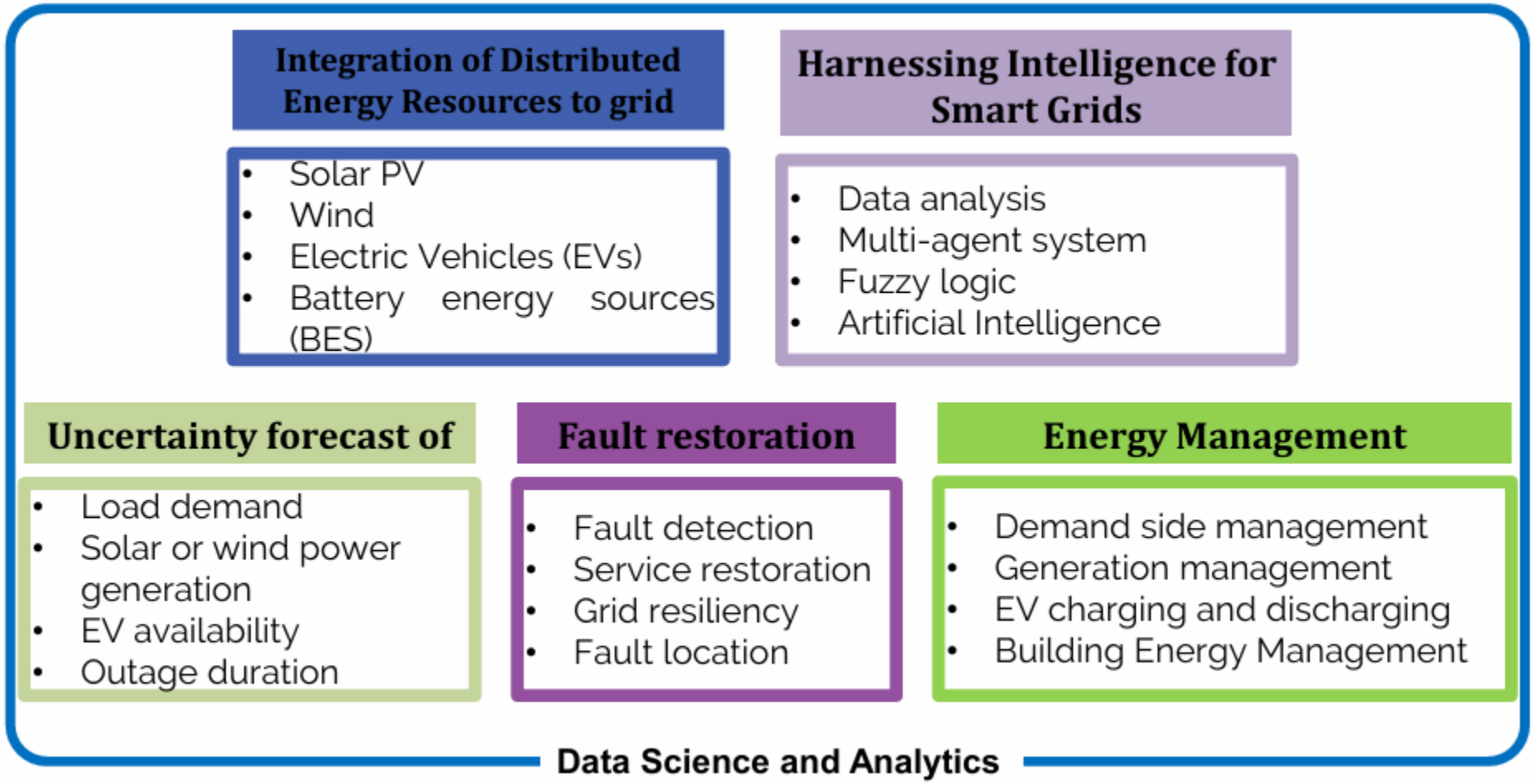

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Dr Anurag Sharma

Research Interests:

- Energy Management in Smart grid,
- Fault Detection, Identification and Service restoration,
- Computational intelligence techniques for power system applications,
- Uncertainty handling and data analytics for distribution systems,
- Planning and integration of Distributed Energy Resources

Email: anurag.sharma@ncl.ac.uk
Google Scholar Link: https://scholar.google.com.sg/citations?user=DbW7jDoAAAAJ&hl=en

Newcastle University
UK | Malaysia | Singapore

Dr Khalid Abidi

Research Interests:

- Theory and modelling of dynamical systems
- Discrete-Time systems
- Time-delay systems
- Learning Control, Robust Control and Applied Nonlinear Control
- Robotics and Mechatronic Systems

Email: khalid.abidi@newcastle.ac.uk

Google Scholar Link: https://scholar.google.com.tr/citations?user=_mPjJwEAAAAJ&hl=en

Electrical Power Engineering

Newcastle University
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Dr Naayagi Ramasamy

Research Interests:

- Converters for distributed renewable energy systems
- Renewable energy integration and applications in smart grid
- Advanced power electronic converters using state-of-the-art and emerging devices
- and materials
- Solid state transformers for the modern grid

Email: naayagi.ramasamy@ncl.ac.uk

Google Scholar Link: https://scholar.google.com.sg/citations?user=eD-HsMsAAAAJ&hl=en

Newcastle University
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Dr Sze Sing Lee

Research Interests:

- Power electronics
- Multilevel inverters
- Modular multilevel converters
- Impedance source converters
- PWM scheme and control of power converters

Email: SzeSing.Lee@ncl.ac.uk

Google Scholar Link: https://scholar.google.com/citations?user=eWHGGe0AAAAJ&hl=en

Electrical Power Engineering

Newcastle University
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Dr Jianfang Xiao

Research Interests:

- Smart microgrid systems
- Microgrid inter-operability
- Energy management system
- Energy storage system (ESS) and hybrid energy storage system (HESS)
- Renewable energy integration

Email: Jianfang.Xiao@ncl.ac.uk

Google Scholar Link: https://scholar.google.com/citations?hl=en&user=bEcJigYAAAAJ

Electrical Power Engineering

Newcastle University
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Dr Muhammad Ramadan Saifuddin

Research Interests:

- Distributed Energy Resource Management System for Transactive Grid.
- Ancillary Services utilizing Distributed Energy Resources in Transactive Grid.
- Transactive Energy Market Trade and Policy.
- Renewable Energy Resources Integration for Low-Inertia Grid.
- Interdependence and Security of Cyber-Physical Power System (IT/OT convergence).
- Cybersecurity vulnerabilities in Industrial Control Systems (Microgrid, Electrical Substation)

Email: ramadan.saifuddin@ncl.ac.uk

Google Scholar Link: https://scholar.google.com/citations?user=Pva428cAAAAJ&hl=en

Marine and Offshore Technology

Dr Arun Kr Dev

Newcastle University
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Research Interests:

- Ship and Offshore Hydrodynamics
- Model testing of ships and offshore floating structures
- Shipyard Management and Practice
- Marine and Offshore production process and management including shipyard simulation.
- Green Ship Technology: energy management, hull optimization, propulsion plant, fuel efficiency, emission, decarbonization, etc.
- Renewable Energy: floating substructure, floating platform, wind, wave and tidal energy, etc.
- Ship Recycling and Offshore Decommissioning
- Uncertainty & Risk Management, arctic engineering, deepwater Technology and Subsea & pipeline Engineering
- Electric And Hybrid Propulsion including Dynamic Positioning & FMEA

Research Projects:

- R&D works in developing high-efficiency nozzles (Keppel High Thrust Nozzles - KHT) while working at Marine Technology Development Pte Ltd, an R&D arm of ex-Keppel Group.
- Participated in the Deepwater Technology Grant Call by Singapore Maritime Institute (SMI). One grant (S$450K) was allocated for the proposal "Dynamic Positioning (DP) Capability Simulation for Marine and Offshore Operations". ©2014 DPCapSim (Completed)
- Participated in Simulation and Modelling by Singapore Maritime Institute (SMI). One grant (S$500K) was allocated for the proposal "Maritime Training and Operation Simulation of Dynamically Positioned Vessels". ©2014 DynPosMarTOS (Completed)
- The Royal Academy of Engineering, UK, approved a project titled ”Safe and Sustainable Decommissioning of Offshore Structures Taking into Consideration the Peculiarities of the ASEAN & South Asia Regions.” I was one of the lead Co-Leads for this project. The project cost is about GBP416K, and the grant amount is about GBP200 K. (Completed)
- The Royal Academy of Engineering, UK, has approved a project titled ”Safety Envelope for Ship Recycling Practices in Bangladesh: Hazard Identification and Risk Evaluation.” I am the Project Lead. The project cost is about GBP287K, and the grant amount is GBP140 K. (Ongoing)

From Newcastle. For the world. **Email**: a.k.dev@newcastle.ac.uk

Google Scholar Link:
https://scholar.google.com/citations?user=9bHjUgwAAAAJ

Marine Technology

Professor Cheng Siong Chin

Newcastle University
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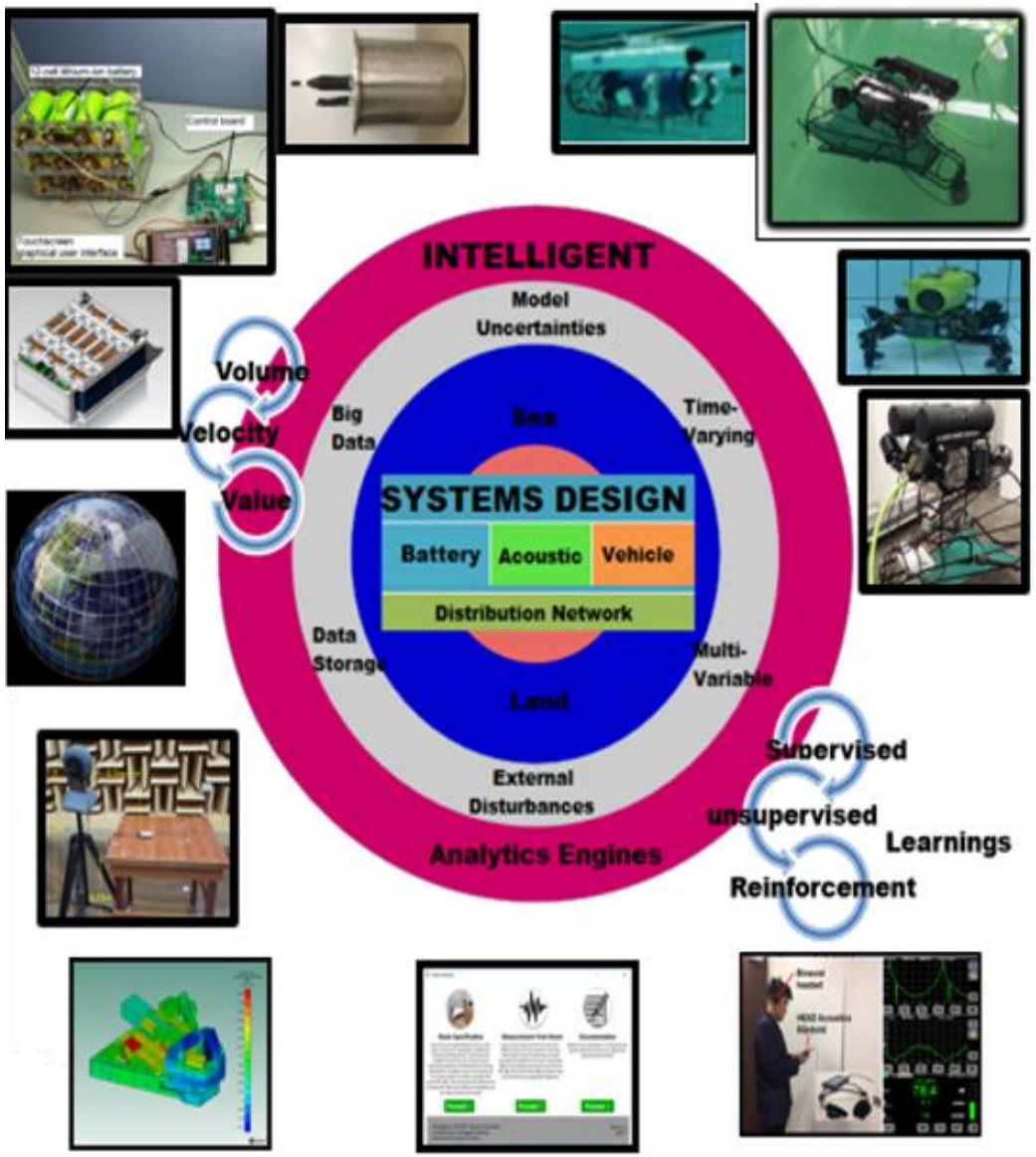
Research Interests:

Intelligent Systems Modelling & Simulation of complex systems for uncertain environments (marine systems, energy storage systems, and acoustics) involving Predictive Analytics (data mining, predictive modeling, and machine learning)

Research Projects:

- 2024 to present: EDB-IPP grant on Design for **Autonomous** Submersible Surveyor
- 2024 to present: EDB-IPP grant on Computational Modelling and **Digitalisation** Tool for Cathodic Protection
- 2020 to 2025: EDB-IPP grant on **Machine Learning** in Design in Manufacturing for Semiconductor Yield Improvement
- 2019-2022: EMA grant on **AI** System for **Energy Storage i**n Hot and Humid Climate
- 2018 to 2022: EDB-IPP grant on **Advanced Informatics** for Event Detection and Temporal Localization
- 2018 to 2022: EDB-IPP grant on **Deep Learning** Approach in Acoustic Classification
- 2016 to 2019: SMI on **Intelligent** Software Tool for **Noise** Modelling and Prediction.
- 2013 to 2016: SMI on the **Battery** Power System for **ROV**.
- 2013 to 2015: Defence Innovative Research Programme Project on **AUV** Docking Hoop Control
- 2013 to 2017: EDB-IPP grant on **Noise** and Vibration Control of Offshore Structure.
- 2013 to 2018: EDB-IPP grant on Vibration and Psycho-**Acoustic** Parameters in Hard Disk Drive



Email: cheng.chin@ncl.ac.uk

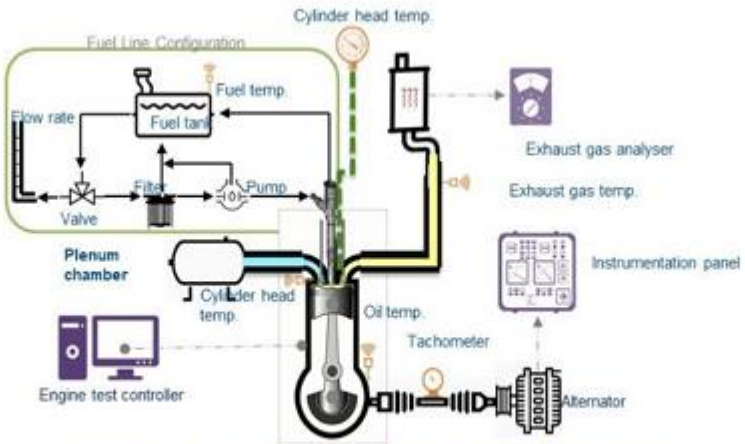
Marine Technology

Dr Ivan CK Tam

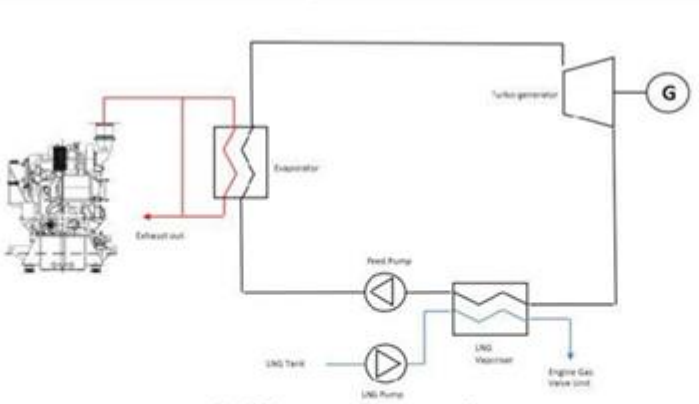
Newcastle University
UK | Malaysia | Singapore

Research Interests:

- Engineering design of Shipboard Engines & Machinery
- Renewable Energy & Green Fuels
- Decarbonization of Fossil Fuels
- Energy Management & Emissions Control
- Modeling and Simulation of ORC and Trigeneration Cycles
- Combustion & Storage of LNG
- Engineering Design for Smart Ocean Liners & Ferries

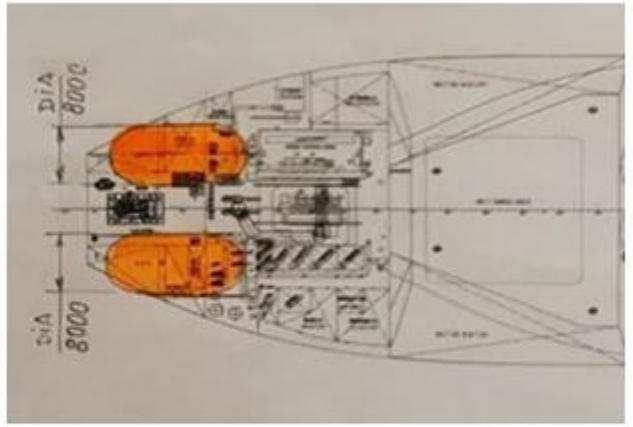


Alternative fuel oil for petrol & diesel engines from recycled plastics



System modelling of ORC for waste heat recovery system in marine applications

Applied research in removing Exhaust Emission with wet scrubbers



Engineering design for LNG combustion and storage for marine applications

Email: ivan.tam@ncl.ac.uk

Marine Technology

Dr Hao Chen

Newcastle University
UK | Malaysia | Singapore

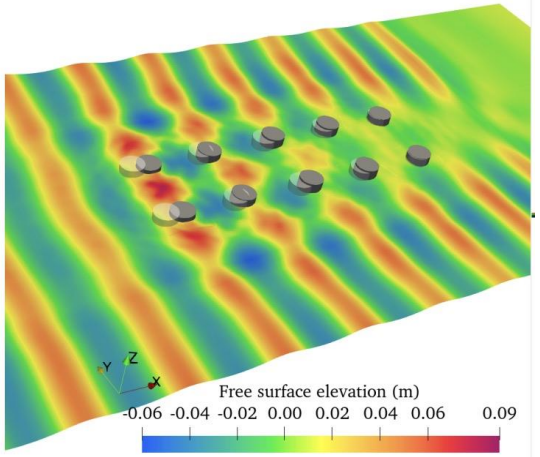
Research Interests:

- Marine Renewable Energy
- Offshore Wind and Solar
- Offshore Aquaculture
- Wave Overtopping
- Maritime Decarbonisation

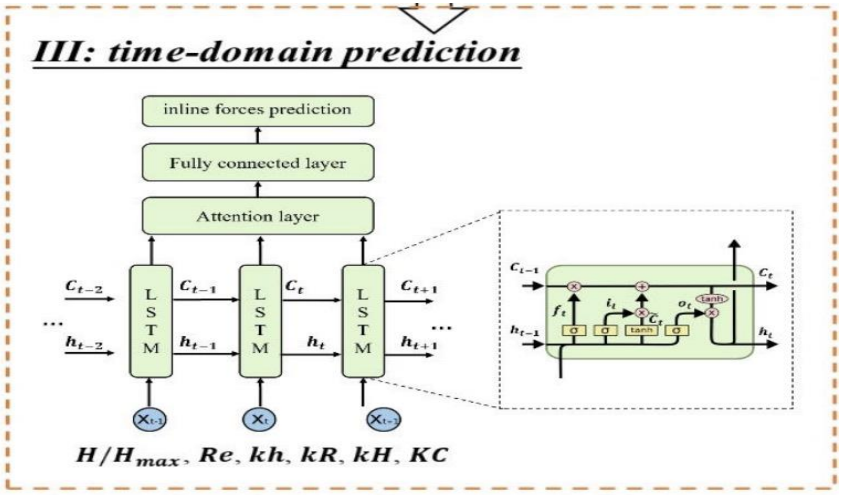
Research Projects:

- EDB-IPP: A novel design for an autonomous submersible surveyor. 2024/09 -- Present.
- EDB-IPP: Analysis of Ammonia dispersion behaviour under the influence of operational and weather conditions during ship bunkering. 2024/09 -- Present.
- EDB-IPP: Computational modelling and digitalisation development for cathodic protection. 2024/04 -- Present.
- Royal Academy of Engineering. Vortex energy drive for eco-friendly and sustainable energy harvesting. 2023/11 -- 2025/01.

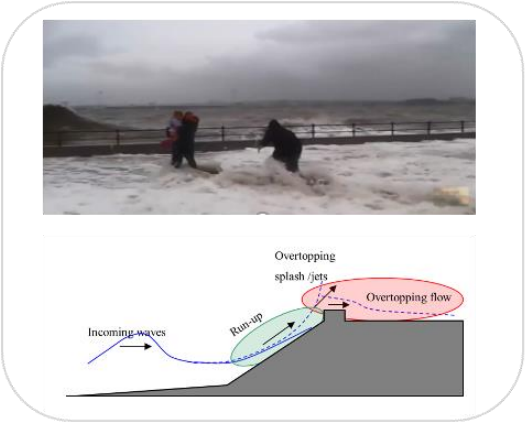
Wave Energy Farm

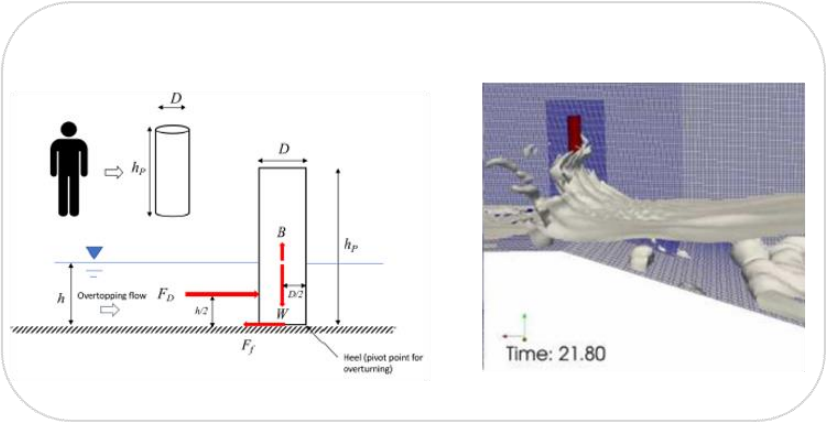


Data Driven Modelling of wave forces



Wave Overtopping Impact on human bodies





Email: hao.chen@ncl.ac.uk Google Scholar: https://scholar.google.com/citations?user=kBF-yNgAAAAJ&hl=en

Marine Technology

Dr Bin Liu

Newcastle University
UK | Malaysia | Singapore

Research Interests:

- Fluid-structure interaction
- Renewable energy (aerodynamics and aeroelasticity of wind turbine)
- Flow control and hydrodynamics stability
- Heat & mass transfer
- Machine learning for fluid dynamics
- Finite element methods and turbulence modelling

Email: bin.liu@ncl.ac.uk

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- Advanced manufacturing research
- Virtual environments
- Thermal storage systems
- Design and system integration
- Advanced materials/composites research

Mechanical Engineering

Dr Zi Jie Choong

Newcastle University
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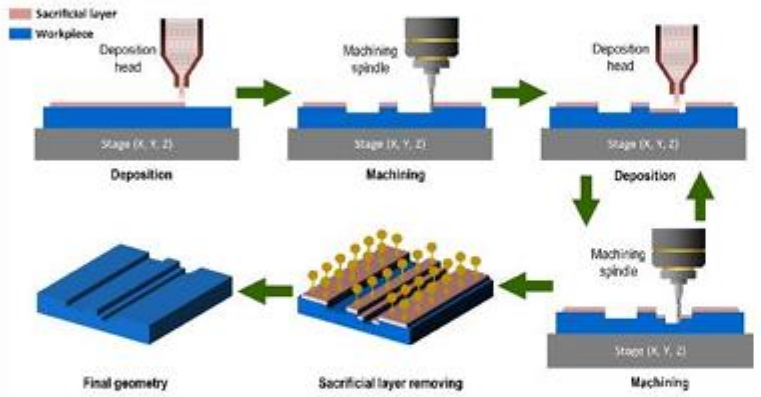
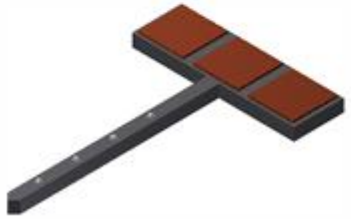
Advanced manufacturing research

Biomedical Implants Manufacturing

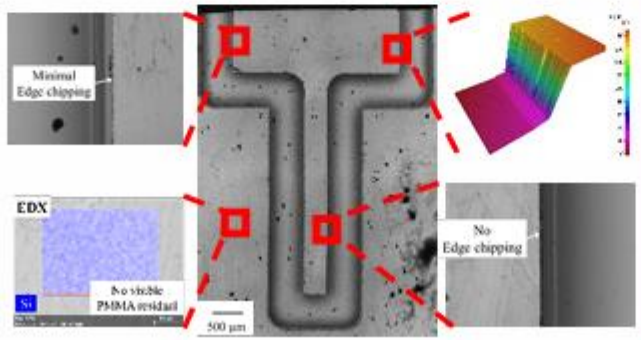
Development of a Hybrid Manufacturing Technique for Shaping of Bespoke Neuro-Implant to Minimise Processing Defects

EPSRC (UK), 2014 to 2021





Bespoke Neuro-Implant



Research Interests

Smart Manufacturing System Design
Sensor design and integration to support process monitoring.

Data-Driven Manufacturing Process Optimisation
Analysis of acquired data from a process for informed and sustainable decision making process

Atomistic and Multi-Scale Modelling
Investigate the material microstructure evolution during a manufacturing process

Email: zijie.choong@newcastle.ac.uk

Mechanical Engineering

Dr Junjie Chong

Newcastle University
UK | Malaysia | Singapore

Human-hardware-in-the-loop (H2IL) test platform

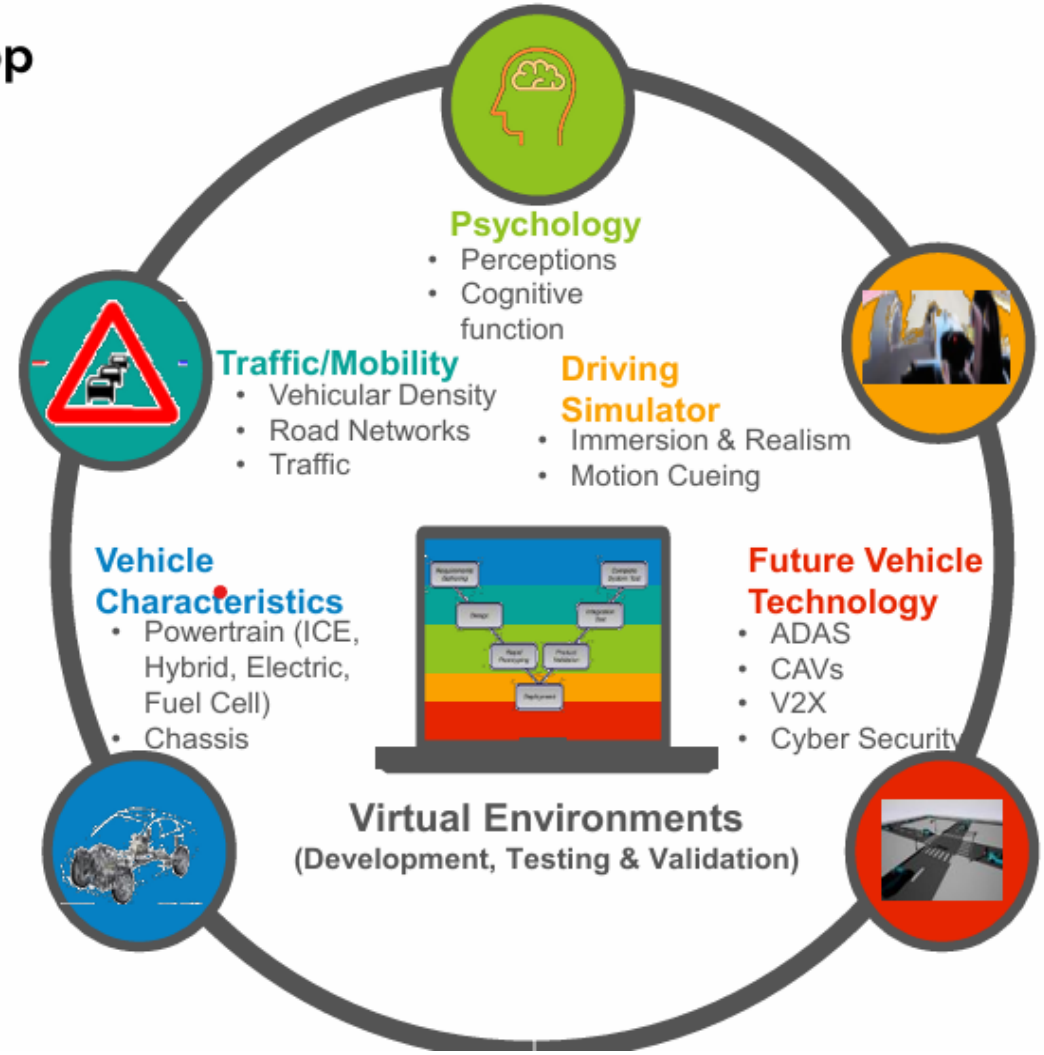
Virtual Environments for Future Electric Powered-Mobility Development using Human-Hardware-in-the-Loop

Dynamic Wireless Charging Strategies for E-Scooter

WIREless Charge-While-Driving for Electric Scooters Range Extension (WIREScooters)

Connected Urban Transport for Last Miles Delivery

For Horizon 2020
(Small Business & Fast Track Innovation for Transport)



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Mechanical Engineering

Dr Michael Lau

Newcastle University
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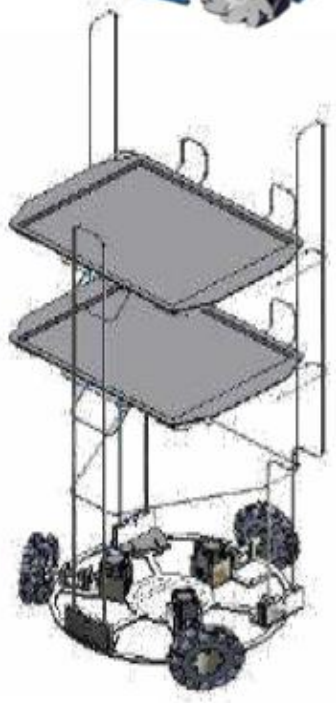
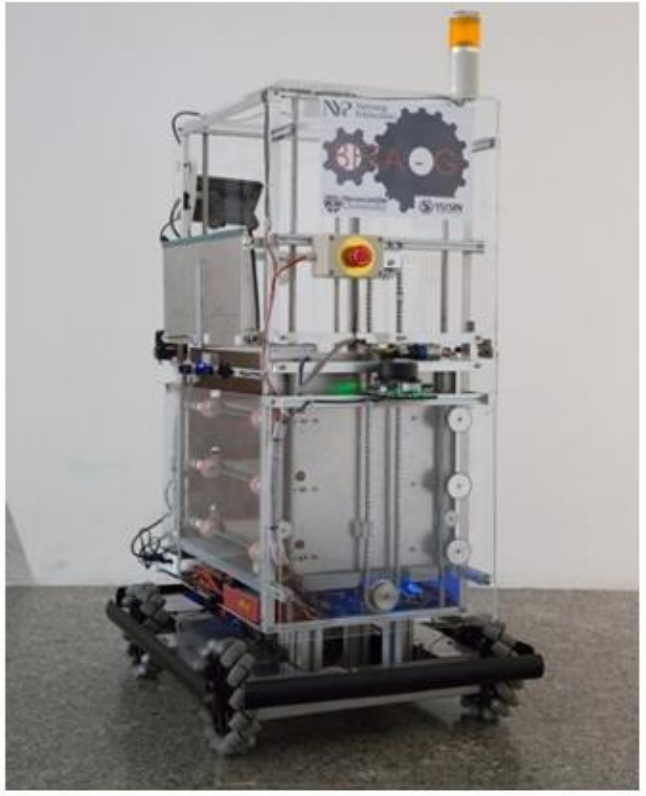
Design and system integration of service robotics



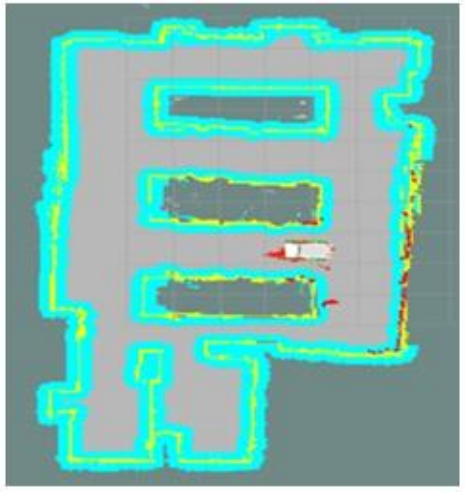


Light weight version of delivering food to table. Omni-directional base suitable for smaller restaurants

Waiter robot

Modular base & 3-tier dumb waiter design

Mapping & navigation using ROS



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Mechanical Engineering

Dr Kheng Lim Goh

Newcastle University
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ADVANCED COMPOSITES RESEARCH

Mechanics of Composite Materials

- Design of hierarchical, light-weight fibre & nanoparticle polymer-based composites
- Damage detection in composites
- Repair of polymer-based composite materials, e.g. aerostructures

Developing composite repair strategy

On-going Projects

1. Optimization of 3D printing of polymer-based composite materials
2. Development of smart composites using 3D printing systems
3. Design of novel polymer-based composite materials reinforced by nanoclay particles, CNTs, for water filtration
4. Repair of fibre reinforced composite materials and structures
5. Design of novel nanocomposite resin reinforced by nanoclay particles, CNTs, for composite repair

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Mechanical Engineering

Dr Xinwei Li

Newcastle University
UK | Malaysia | Singapore

Current Projects:

- Development of efficient sound-absorbing lattice metamaterials
- Development of multifunctional lattice metamaterials
- Novel methods for inter-floor noise insulation

Research Interests:

- Design of 3D printed lattice metamaterials and composites
- Understanding the structural-property relationships of metamaterials
- Structural mechanics and acoustics
- Developing new analytical acoustics models
- Finite element analysis
- Development of advanced 3D printing techniques

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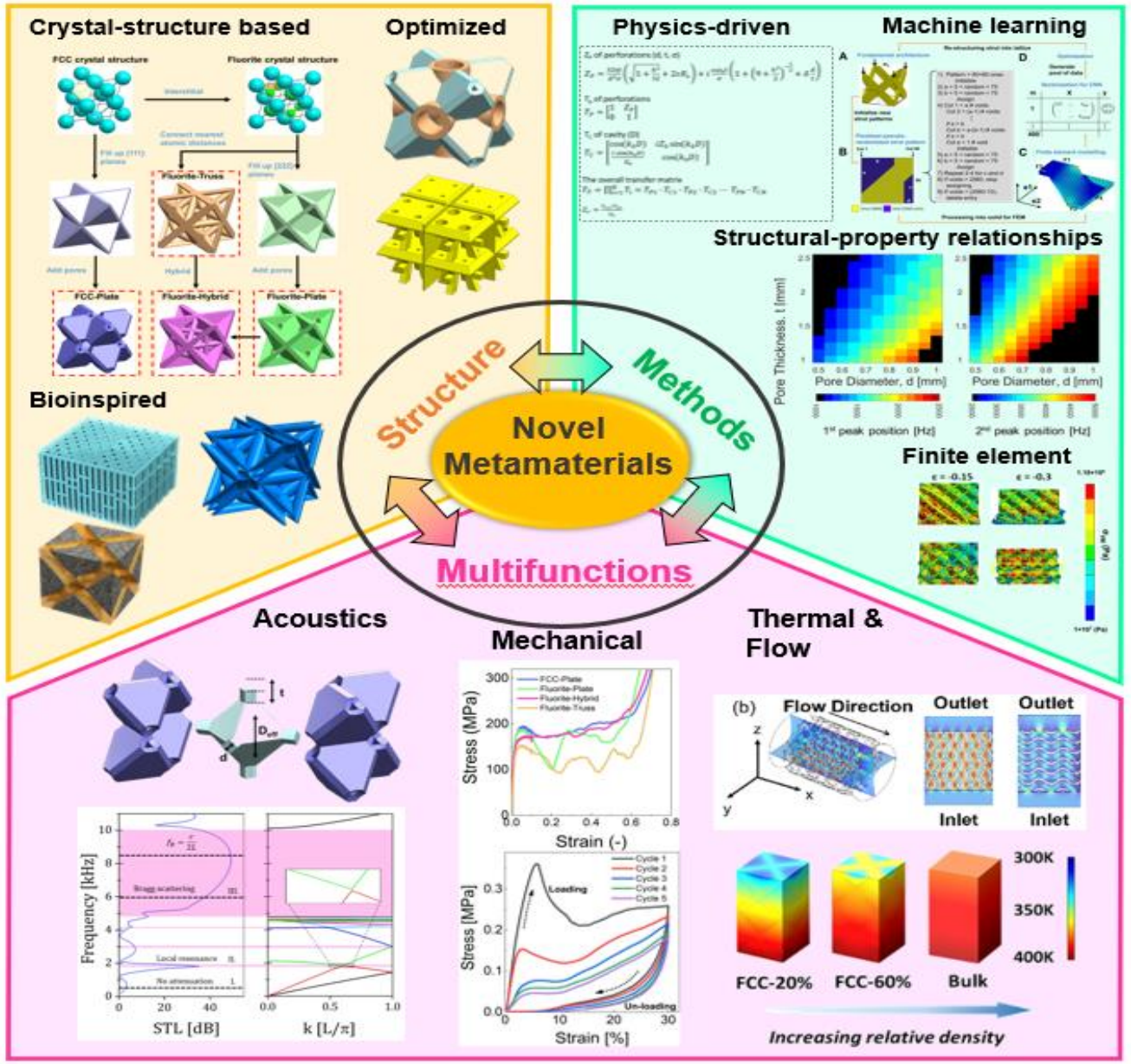
Research output:
https://scholar.google.com.sg/citations?user=LYXzM5YAAAAJ&hl=en



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