Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG033
Project title	**E-Scooter Wireless Charging Demo**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Duleepa J Thrimawithana
Contact details	d.thrimawithana@auckland.ac.nz
Skills Needed	• PCB, • Soldering, • Simulation, • CAD

Project description

This project aims to develop a public demonstrator for John Boys Wireless Power Center. The goal will be to develop the transmitter and received systems needed to wirelessly charge an electric scooter at 100W. First the coil designs will be simulated in Ansys to develop a light weight receiver coil. Electronics along with a controller will be developed to energise the primary and regulate the output.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG034
Project title	**Flux pump design for a super-conducting magnet**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Duleepa J Thrimawithana
Contact details	d.thrimawithana@auckland.ac.nz
Skills Needed	• PCB, • Soldering, • Simulation, • CAD

Project description

This project intends to develop a GaN based flux pump that can generate 300A or more to drive a super conducting magnet. Student will investigate current sensing and control techniques to operate the switches efficiently. Techniques to minimise the impact of transformer leakage inductance and also the ripple current in the magnet will also be investigated. Finally a 300A self-contained flux pump will be built.

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Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG035
Project title	**Cryogenic Wireless Power System for a Flux Pump**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Duleepa J Thrimawithana
Contact details	d.thrimawithana@auckland.ac.nz
Skills Needed	• PCB, • Soldering, • Simulation, • CAD

Project description

This project aims to develop a wireless power transfer system that operates at temperatures below 77K. Main application will be to investigate the feasibility of deriving a high current output to drive a flux pump. The receiver of the wireless power transfer system could be on a rotor of a super conducting motor and hence should allow power transfer to a rotating load.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG036
Project title	**Cryogenic Ancillary Power Sources**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Duleepa J Thrimawithana
Contact details	d.thrimawithana@auckland.ac.nz
Skills Needed	• PCB, • Soldering, • Simulation, • CAD

Project description

This project intends to revise the existing cryogenic ancilary power supply design, to make it more efficient and compact. Resonant converter topologies will be investigated along with GaN HEMTs. The target will be to design and develop a 2W power supply that take 12V and generate an isolated 12V output. Target efficiency is 90%.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG037
Project title	**Multi-Agent Reinforcement Learning based Navigation for Autonomous Drones**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Henry Williams
Contact details	henry.williams@auckland.ac.nz
Skills Needed	• Python

Project description

The project will focus on designing, implementing, and experimentally evaluating MARL methods for drone navigation and aerial interaction tasks. Both simulation and real-world platforms will be used, with an emphasis on understanding how learned behaviours transfer from simulation to physical systems. Particular attention will be given to sensor data integration, real-time processing constraints, inter-agent coordination, and robustness to environmental uncertainty. This work builds on ongoing work within the Robot Learning Team (https://robotlearningteam.org/) - https://github.com/UoA-CARES/drone_gym

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG038
Project title	**Digital educational engineering**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nasser Giacaman
Contact details	n.giacaman@auckland.ac.nz
Skills Needed	• Must have: Experience with React, JavaScript, Node.js and some understanding of the wider web development ecosystem. • Nice to have: Experience with TypeScript, document-based NoSQL databases such as MongoDB and designing REST APIs. • Experience with prompt engineering and working with the OpenAI and Anthropic APIs. • Experience with WebRTC.

Project description

Digital Educational Engineering (DEE) is about using an engineering approach to design, build, and evaluate a software-based solution that will address some education-based problem. This project will involve developing a software application or software tool, which can utilise a range of digital technologies. The particular project selected will be determined closer to the time, after meeting the allocated student, in order to carry out a project that they are technically confident in. To be successful in this project, you should be a strong programmer confident in using technologies such as HTML, CSS, JavaScript, React, Python, etc.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG039
Project title	**Autonomous social guide robot**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Ho Seok Ahn
Contact details	hs.ahn@auckland.ac.nz
Skills Needed	• Interest in Robotics

Project description

Problem Statement and Approach. The project explores the integration of social robotics, human-robot interaction (HRI), autonomous navigation, and real-time information delivery. A mobile social robot equipped with sensors (LiDAR, cameras) and SLAM-based navigation will safely move through indoor spaces while interacting with visitors using computer vision, speech, and touchscreen interfaces. Location-aware systems will enable context-specific explanations of university facilities and research activities. Expected Results The expected outcome is a functional prototype capable of autonomous indoor navigation along campus routes while safely avoiding obstacles and interacting socially with visitors. The robot will detect human presence, provide basic dialogue interaction, and deliver location-based information about university buildings and research. Initial user evaluations will assess engagement, usability, and perceived friendliness compared to traditional guided tours.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG040
Project title	**Wireless Power Transfer Prototype Development for Digital Twin Systems**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Aiguo Patrick Hu
Contact details	a.h@auckland.ac.nz
Skills Needed	• Ansys Maxwell and LTspice simulation, • PCB design and testing

Project description

This project aims to develop and experimentally validate a low-power wireless power and signal transfer system operating within a limited 3D space, such as a charging cabinet or smart healthcare space. The student will assist in the design and development of the wireless power transfer (WPT) hardware, integration of wireless communication modules, PCB development, and experimental testing under different operating conditions. The project will mainly focus on physical prototype development, system characterization, and collection of experimental data to support the development of digital twin models by the software research team.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG041
Project title	**An Empirical Study of Automated Dependency Update Bots**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Maryam Masoudian, Valerio Terragni, Kelly Blincoe
Contact details	maryam.masoudian@auckland.ac.nz
Skills Needed	• Students interested in this project should have basic familiarity with software development and version control platforms such as GitHub or GitLab. • Proficient with Python. • An interest in software security, dependency management, or empirical software engineering is also helpful.

Project description

Modern software projects often depend on many third-party libraries. While these dependencies are useful, they can also introduce security risks when vulnerabilities are discovered. Automated dependency update tools such as Dependabot and Renovate help developers keep their dependencies up to date by opening pull requests or alerts when updates are available. This project explores how these tools are used in real-world software projects. The goal is to better understand how effective automated dependency update bots are in practice, especially when dealing with security updates, developer response, and possible disruptions caused by dependency changes. Students working on this project will analyze open-source repositories from platforms such as GitHub or GitLab and study how projects use Dependabot or Renovate. The project will involve repository mining, data analysis, and basic security-related investigation.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG042
Project title	**Autonomous Grid Operation Using AI and Digital Technologies**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nirmal Nair, Krishna Kumar
Contact details	n.nair@auckland.ac.nz
Skills Needed	• Year 3 or Year 4 ECSE students (EEE, SE, CSE) will have the necessary background skill to undertake this summer project alongside support from the current Power Systems Group research team.

Project description

Research Aim To investigate how AI, digital twins, and intelligent automation can support future autonomous operation of the electricity system.

Key Research Questions

• How can AI aided Digital twins improve future electricity network operation and control?
• What technical and operational challenges limit autonomous energy system adoption?

Project Objectives

The student will
• Study AI applications in power systems
• Examine digital twin technologies for electricity networks
• Investigate intelligent operational optimization
• Analyze cyber-physical energy system concepts
• Review challenges of autonomous energy systems

Methodology

The project will combine a literature review, a technical assessment, and a conceptual analysis. It will review research and industry developments in AI, digital twins, smart grids, and autonomous energy systems. The study will assess AI-based approaches for grid monitoring, predictive operation, and intelligent control, alongside digital twin applications in power systems. Where appropriate, simplified data-driven analysis and digital twin modelling may be explored. The project will also investigate future trends such as autonomous grid operation, cyber-physical integration, and resilient energy infrastructure.

Expected Outcomes

• Review of AI and digital technologies for power systems
• Conceptual framework for autonomous grid operation
• Identification of opportunities and technical challenges
• Recommendations for future intelligent energy infrastructure

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

- Final technical report and presentation

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG043
Project title	**Interaction of Distributed Energy Resources with Future Hybrid AC/DC Grids**
Discipline	ELECTRICAL, COMPUTER, AND SOFTWARE ENGINEERING
Supervisor(s)	Nirmal Nair, Krishna Kumar, Yuan Liu, Tobias Massier
Contact details	n.nair@auckland.ac.nz
Skills Needed	• Year 3 or Year 4 EEE student will have the necessary background skill to undertake this summer project alongside support from the UoA MBIE funded Advanced Energy Technlogy-AETP program "Architecture of the Future Low-Carbon, Resilient, Electrical Power System" better known as Te Whatunga Hiko - Future Architecture of the Network, or FAN

Project description

Research Aim

To investigate how distributed energy resources interact with future hybrid AC/DC electricity networks and identify topology and control strategies that best support resilient, flexible operation.

Research Objectives

The student will:

• Review hybrid AC/DC network architectures and current FAN WS2 topology findings.
• Analyse how DERs (solar PV, BESS, EVs) affect power flow, voltage stability, and protection in converter-dominated networks.
• Identify technical challenges for protection coordination and fault isolation in mixed AC/DC systems.
• Propose and evaluate (through simulation or literature synthesis) topology or control options that improve DER integration.

Methodology

The project will combine a focused literature review of WS2-relevant publications, technical analysis of DER interaction scenarios, and simplified simulation (MATLAB/Simulink/HIL) to evaluate system behaviour under different topology options.

Expected Outcomes

• Concise literature synthesis linked to FAN WS2 topology questions.
• Analysis of key DER interaction challenges for hybrid AC/DC systems.
• Recommendations for future FAN research directions.
• Technical report and presentation.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG044
Project title	**Plug-and-Play DC Infrastructure for Future Electrified Cities**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nirmal Nair, Krishna Kumar, Yuan Liu, Tobias Massier
Contact details	n.nair@auckland.ac.nz
Skills Needed	• Year 3 or Year 4 EEE student will have the necessary background skill to undertake this summer project alongside support from the UoA MBIE funded Advanced Energy Technology- AETP program "Architecture of the Future Low-Carbon, Resilient, Electrical Power System" better known as Te Whatunga Hiko - Future Architecture of the Network, or FAN

Project description

Research Aim

To investigate plug-and-play DC infrastructure concepts for future electrified cities and evaluate how modular DC connection approaches can support safe, interoperable, and resilient urban energy networks.

Research Objectives

The student will:

• Review existing FAN WS2 and WS3 findings on DC bus architectures and converter topologies.
• Analyse plug-and-play connection scenarios and their impact on protection, stability, and power quality.
• Identify key interoperability and control challenges for modular DC urban infrastructure.
• Develop conceptual recommendations for future NZ DC network standards or design guidelines.

Methodology

Focused literature review of WS2/WS3 outputs and international DC infrastructure developments; technical assessment of connection scenarios using available FAN simulation tools (MATLAB/Simulink, OPAL-RT where appropriate); synthesis of findings into a conceptual design framework.

Expected Outcomes

• Review of FAN-relevant plug-and-play DC concepts and challenges.
• Scenario analysis of DC connection impacts on protection and stability.
• Conceptual framework for future NZ urban DC infrastructure.
• Technical report and presentation.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG045
Project title	**Community Microgrids for Climate-Resilient Energy Futures**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nirmal Nair, Tipene Meritt (UoC) Krishna Kumar, Yuan Liu, Tobias Massier
Contact details	n.nair@auckland.ac.nz
Skills Needed	• Any Year 3 or 4 Engineering Student, will have the necessary background skill to undertake this summer project alongside support from the UoA MBIE funded Advanced Energy Technology- AETP program "Architecture of the Future Low-Carbon, Resilient, Electrical Power System" better known as Te Whatunga Hiko - Future Architecture of the Network, or FAN.

Project description

Research Aim

To extend the Mauri-Informed Digital Twin framework by investigating community microgrid topology options and control strategies that maximize energy resilience, cultural well-being, and climate adaptability for Māori communities.

Research Objectives

The student will

• Review the MII framework and VSG results from the 2025–26 summer project and identify gaps or extension opportunities.

• Investigate community microgrid topologies (islanded, grid-tied, hybrid AC/DC) suited to marae and remote NZ communities.

• Analyze renewable integration, battery storage, and islanding transition strategies within the MII decision framework.

• Develop recommendations for culturally informed microgrid design guidelines or updated MII weightings.

Methodology

Literature review extending the 2025–26 summer outputs; engagement with Vision Mātauranga context materials; technical analysis of microgrid topology options; possible extension of the digital twin or MII model using MATLAB/Simulink or Python-based tools.

Expected Outcomes

• Extended MII framework with updated microgrid topology analysis.

• Conceptual resilient community microgrid design guidelines.

• Identification of future FAN/Vision Mātauranga research directions.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

• Technical report and presentation.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG046
Project title	**Fault Behaviour and Protection Challenges in Future DC Networks**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nirmal Nair, Krishna Kumar, Yuan Liu, Tobias Massier
Contact details	n.nair@auckland.ac.nz
Skills Needed	• Year 3 or Year 4 EEE student will have the necessary background skill to undertake this summer project alongside support from the UoA MBIE funded Advanced Energy Technology- AETP program "Architecture of the Future Low-Carbon, Resilient, Electrical Power System" better known as Te Whatunga Hiko - Future Architecture of the Network, or FAN

Project description

Research Aim

To investigate fault characteristics and protection options for future DC and hybrid AC/DC electricity networks, building directly on existing FAN WS2 simulation and hardware results.

Research Objectives

The student will:

• Review WS2 fault detection and protection findings and identify a specific gap or extension scenario.

• Compare AC and DC fault characteristics and analyze protection challenges for a selected network topology.

• Evaluate one or more candidate protection approaches (signal processing, travelling waves, zonal protection) through simulation or literature synthesis.

• Develop recommendations aligned with WS2's 2027 Key performance Indicator on optimum DC circuit topology.

Methodology

Targeted literature review building on WS2 publications; selection of a specific fault scenario or protection method; simulation using MATLAB/Simulink, PSCAD, or OPAL-RT (with guidance from WS2 researchers); synthesis of results into recommendations.

Expected Outcomes

• Extension of FAN WS2 fault behaviour analysis for a specific DC topology or scenario.

• Comparative review of protection approaches relevant to NZ LV/MV DC networks.

• Recommendations for WS2 research pathway towards 2027 KPI.

• Technical report and presentation.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG047
Project title	**Design Space Exploration for Energy-Efficient AI Hardware Accelerators**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Maryam Hemmati, Morteza Biglari-Abhari
Contact details	m.hemmati@auckland.ac.nz
Skills Needed	• Digital hardware design skills at RTL level using VHDL/Verilog, Familiarity with EDA tools such as Quartus/Vivado, • Computer architecture knowledge

Project description

Rapid advancements in Machine Learning (ML) and Artificial Intelligence (AI) have resulted in widespread deployment of AI solutions, shifting them toward heterogeneous edge platforms to meet strict real-time constraints. Deploying state-of-the-art algorithms requires high-performance, low-power hardware architectures. This project aims to investigate the performance and energy-efficiency trade-off. Toward developing an automated Design Space Exploration (DSE) framework, the project will optimize hardware-software partitioning and dataflow mapping across different computing resources on heterogeneous platforms. The objective is to discover Pareto-optimal hardware accelerators that minimize energy consumption while maximizing throughput for real-time applications. This project requires a strong background in digital system design and computer system architecture. Competency with Electronic Design Automation (EDA) tools is required, and applicants should be willing to master new AMD design flows, including Vitis and Vivado.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG048
Project title	**VeinPrint: Biometric Data Collection and Matching Using Palm and Wrist Vein Patterns**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Waleed H. Abdulla and Felix Marattukalam
Contact details	w.abdulla@auckland.ac.nz
Skills Needed	• Image Processing, Machine Learning & Deep Learning, • Python Programming

Project description

This project aims to design and implement a system for the collection of palm vein and wrist vein images to support the optimization of biometric matching algorithms. Vein pattern recognition is a highly secure and contactless biometric modality that leverages the unique subcutaneous vascular patterns of individuals, which are difficult to replicate or forge. These patterns are typically captured using near-infrared (NIR) imaging, which reveals vein structures invisible to the naked eye. The project involves the creation of a robust data collection pipeline using NIR imaging hardware, potentially adapted for use with mobile or low-cost imaging devices. Collected vein images will be used to train and evaluate advanced machine learning and deep learning-based biometric matching models. Key goals include improving image acquisition quality, enhancing feature extraction techniques, and optimizing matching accuracy under varying conditions such as lighting, skin tone, and hand positioning. As part of the project, students will collect and annotate a dataset of palm and/or wrist vein images, explore image pre-processing and enhancement methods, and obtain results using the existing biometric recognition pipeline. The final outcome will include a results based on reliable vein pattern recognition and matching, along with recommendations for real-world deployment in identity verification systems.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG049
Project title	**Development of an Optimised Illumination and Thermal Control System for Hyperspectral Honey Quality Assessment**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Waleed H. Abdulla and Felix Marattukalam
Contact details	w.abdulla@auckland.ac.nz
Skills Needed	• Electronics prototyping, • Optical systems, • CAD design, • Image processing

Project description

Hyperspectral imaging (HSI) is a promising non-destructive technique for assessing honey quality, including purity, adulteration, moisture content, crystallisation, and floral origin. However, the accuracy and repeatability of HSI measurements are highly dependent on the illumination system used during image acquisition. This project aims to design, build, and evaluate an optimised illumination system for hyperspectral imaging of honey samples. The system will utilise broadband halogen light sources coupled with optical fibre light guides to provide uniform illumination while isolating heat-generating components from the imaging chamber. As honey is typically maintained at approximately 40°C during analysis, suitable cooling and thermal management strategies will also be investigated to ensure stable imaging conditions. The project involves significant hands-on engineering work, including the design, fabrication, assembly, and testing of the illumination and thermal control system. Students will also assist in developing a hyperspectral honey image dataset through sample preparation, image acquisition, and preliminary data analysis. The outcome will be an improved imaging platform and dataset to support ongoing research in honey quality assessment and authentication

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG050
Project title	**Varoa Mites: Imaging and labelling bees**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nitish Patel
Contact details	nd.patel@auckland.ac.nz
Skills Needed	• Software and imaging are the primary requirements but some electronics will also be need to be built.

Project description

Varroa mites have been infesting bees and beehives. An ME Thesis project (starting S2) will/may create a rig for imaging bees entering and leaving a beehive. Depending on the progress of the project in S2, the summer research will progress the acquisition of images, preprocessing the video and label the images. The final outcome will be a database of images that can be used for traditional image processing pipelines or AI based pipelines.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG051
Project title	**Sensing Bees**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Nitish Patel
Contact details	nd.patel@auckland.ac.nz
Skills Needed	• CAD design, electronics and instrumentation.

Project description

We intend to build an electronic circuit for sensing bees in a hive. The project will focus on creating the artwork, assembling the circuit and undertaking extensive lab testing under various conditions. It is also expected that the research work will make measurements on an actual hive.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG052
Project title	**Designing Software for AI Maintainers**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	James Tizard
Contact details	james.tizard@auckland.ac.nz
Skills Needed	• Preferred skills: Java or Python programming; • basic software design/OOP; • interest in LLMs or AI coding tools; • ability to run experiments and analyse results.

Project description

Large language models are changing how software is written and maintained, but today's software design principles were mostly created with human developers in mind. This project explores an emerging question what makes software easier for AI tools to understand, modify, and maintain? The goal is to investigate whether different software design choices can make LLM-based maintenance more accurate, efficient, and scalable. The project offers an opportunity to work at the intersection of software engineering and AI, contributing early evidence toward practical guidance for designing software that works well with modern AI coding tools.

Faculty of Engineering and Design
Summer Research Scholarships

2026/2027 Projects (Electrical, Computer, and Software Engineering)

Project code	ENG053
Project title	**Mutation Testing for Agentic AI Software**
Discipline	Electrical, Computer, and Software Engineering
Supervisor(s)	Valerio Terragni
Contact details	v.terragni@auckland.ac.nz
Skills Needed	• strong programming skills in Java and/or Python; • familiarity with Git and GitHub; • interest in AI-based software systems. • Students should have completed SOFTENG 283 in either 2025 or 2026.

Project description

This project investigates how mutation testing can assess the quality of test suites for agentic AI systems. Agentic AI software uses large language models to make decisions, call tools, manage workflows, use memory, and complete tasks with partial autonomy. While such systems are increasingly used in software engineering, data analysis, automation, and web applications, their testing quality remains unclear.

The project will mine GitHub for real open-source Java and Python agentic AI projects that include tests. The student will create scripts to install these projects, run their test suites, and apply both traditional code mutations and agentic-AI-specific mutations. These may include changes to prompts, tool descriptions, tool outputs, workflows, memory, and configuration files.

A key outcome will be a tool that automatically generates agentic-AI mutations. The project will compare how effectively existing tests detect different fault types and identify which parts of agentic AI systems are hardest to test. The work involves empirical software engineering, including GitHub mining, tool development, scripting, large-scale test execution, result collection, and analysis.