2025/26 B.Sc CS Final Year Project areas

Prof. Johann Briffa

Areas of interest are as follows:

- GPU computing / high-performance computing
- Image & signal processing
- Error control coding

Projects include: Current, (Recently Completed), Co-Investigator*

- Quantum communications / Quantum Key Distribution [SQUIRE / ATTESTER* / ANQUOR / PRISM / QSNP / QUDICE / (QUANGO)]
- Light field capture and processing [(VOLARE)]
- Satellite image analysis [ADVISER / RBMP]
- Drone missions for acquisition of large-scale 3D assets

Possible titles: (to be discussed with me first; in some cases RSA contract can be set up)

- Embedded implementation of QKD post-processing stack
- Simulator / component for QKD end-to-end link
- Error correction for QKD links
- Mobile application for DJI drone automated flight control
- Blender plugins for drone flight path planning
- High precision camera distortion correction

Prof. Ing. Victor Buttigieg

Areas of interest are as follows:

- Smart Homes
- Software Defined Radio
- Error Control Coding

Sample Project Titles:

- Decoder demonstrator for LDPC codes
- Software library to construct LDPC codes
- Wi-Fi spectrum analysis using a software defined radio

Dr Inġ Etienne-Victor Depasquale

Areas of interest are:

- Reliable wireless routing for microcontroller-based devices
- Development of software power meters
- Development of Segment Routing to carry Green Attributes

Sample Project Titles:

- Comparative Analysis of extant wireless routing protocols
- Comparative Analysis of Scaphandre and PowerTOP: Accuracy Assessment Under Diverse System Loads.
- Green Policies for Segment Routing over Multiprotocol Label Switching

Dr Ing. Trevor Spiteri

Areas of interest are as follows:
Digital signal processing

- Digital signals include audio, video, etc.
- Processing them involves analysing, filtering, etc.
- Requirements:
    - Mathematical background
    - Some programming (C, Python, or other, depending on the project)

Embedded systems

- Have tight constraints, such as small memory, microcontrollers, etc.
- Can also be used for Internet of Things (IoT) devices

Prof. Ing. Saviour Zammit

Areas of interest are as follows:

- 5G/Beyond 5G/6G Open Platforms for Communications
- Low-latency, robust, multimedia (especially video) communications
- UAV/IoT communications
- AI/ML for communication systems

Current Projects:

- Digital Twins for NTN 5G/6G Communications
- AI/ML applications for Communications
- Video capture and inference from UAVs
- V2X communications in 5G/B5G/6G

Prof. Ing. Carl James Debono

Areas of interest are as follows:
- Object detection and tracking
- Medical image / video processing
- Depth-based video processing

Prof. Christian Colombo

Areas of interest are as follows:
- Runtime verification (e.g. robotics, financial systems, communication protocols, IoT)
- Security considerations for a runtime verification deployment
- Model-based stress testing (e.g. of an industrial software system)
- Machine learning for cyber security

Sample Project Titles:
- Runtime verification of robotic systems running on ROS2
- Securing the X3DH Protocol through RV-TEE
- Machine learning techniques for malware detection
- An IoT case study for RVsec
- Extending RVsec with performance and security properties

Dr Neville Grech

Areas of interest are as follows:
- Program Analysis
- Blockchain and smart contracts
- Security and privacy

Prof. Kevin Vella

Areas of interest are as follows:
- Practical concurrent systems
- Distributed computing in practice
- High performance computing
- Software tools and compilers for programming languages

Prof. Adrian Francalanza

Areas of interest are as follows:
- Concurrency and Distribution
- Programming Language Design and Implementation
- Static and Runtime Verification

Prof. Mark Micallef

Areas of interest are as follows:
- AI-Assisted Software Engineering
- Test Automation

Sample Project Titles:
- Evaluating the Impact of AI-Assisted Code Generation on Software Development Efficiency
- Investigating AI-Assisted Testing: Reducing Errors Through Automated Test Case Generation
- Comparative Analysis of Traditional Debugging Versus AI-Augmented Debugging Techniques
- Investigating the role of AI in Continuous Integration and Development Pipelines

Prof. Gordon Pace

Areas of interest are as follows:
- Software verification
- Domain specific language design and implementation
- Formal reasoning about contracts
- Runtime verification

Dr Sandro Spina

Areas of interest are as follows:

Offline and Real-time Rendering
- Parallel and distributed rendering algorithms for physically-based visualisation
- Psychometric modelling for rendering optimisations
- Immersive virtual reality environment creation and visualisation (including material modelling and rendering, PCG and HCI)
- Denoising and upscaling of rendering output for scenes with glossy and specular surfaces
- Accelerated hybrid rendering (rasterisation-ray tracing) pipelines

Serious Games / Video Games
- Asset, world and environment procedural generation (e.g. clothing, city-scapes, levels)
- Creation of emerging behaviour in gameplay elements, e.g.:
    - solving problems in ways the developer did not envisage
    - interaction of systems to create credible but interesting/surprising outcomes

Dr Mark Vella

Area of interest:

- Predictive methods for cloud-native computing

Sample Project Titles:

- A time series-based approach to elastic kubernetes scaling
- AI-Driven Kubernetes Optimization: Using Supervised Learning to Forecast Kubernetes Metrics
- Resource prediction model based on Kubernetes container auto-scaling technology
- Comparing gradient boosting machines to statistical learning methods for cloud-native telemetry prediction
- Comparing LSTM to statistical learning methods for cloud-native telemetry prediction
- Exploring transformer-based models for cloud-native telemetry prediction
- Health prediction of Kubernetes nodes using time-series forecasting
- Service-failure prediction using rule-based Kubernetes operators
- Anomaly detection in Kubernetes clusters