# Sam Spekreijse

## Personal Data

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## Work Experience

**JUL 2017-*Present*** | Teaching Assistant at THE UNIVERSITY OF CANTERBURY, Christchurch
*Tutelage, Marking and Administration*

Teaching assistant and course developer for a 200-level C programming course. Teaching assistant for 300/400-level embedded systems/signal processing courses, a 400-level probabilistic robotics course, and a 300-level operating systems course. This involves explaining concepts to students in lab sessions, lecturing small groups, exam marking, test invigilation, and writing/recording course material.

**MAR 2019-AUG 2019** | Research Assistant at THE UNIVERSITY OF CANTERBURY, Christchurch
*Photogrammetry, Object Detection, Mobile Robotics*

Developed software for a proof-of-concept forestry robot to identify trees and navigate to an optimum position for clearing. Approaches investigated include photogrammetry for 3D map reconstruction and neural network based object detection.

**NOV 2018-FEB 2019** | Research Scholar at THE UNIVERSITY OF CANTERBURY, Christchurch
*Embedded C Development, Embedded Hardware Development*

Developed a controller/converter device that parses a custom serial protocol and controls an optical telescope's tip-tilt mirror.

**JAN-FEB 2018** | Engineering Contractor at SYFT TECHNOLOGIES LTD, Christchurch
*Embedded C Development*

Developed drivers for $I^2C$ sensor daughter boards and closed-loop controlled heating units. Also created a data-passing API for use with CANBUS across all production boards.

**NOV 2016-FEB 2017** | Engineering Intern at AUCOM ELECTRONICS LTD, Christchurch
*Embedded C Development*

Integrated new SPI current-sensing instrumentation, and wrote the signal analysis code for the new input. Also worked on interpreting magnetometer readings for preventative maintenance.

**NOV 2015-FEB 2016** | Engineering Intern at SYFT TECHNOLOGIES LTD, Christchurch
*Java Development, Embedded C Development*

In Java, developed an experimental framework of data analysis algorithms for use in end-user software, now released. Also designed a fully automated component test jig that ensured the unit under test met specifications.

**NOV 2014-FEB 2015** | Administration Assistant at TRANSPOWER NEW ZEALAND LTD, Wellington
*General Administration, Dispatching*

Helped maintain the national grid asset records, and allocated contractors to job requests.

## Education

**2019-*Present*** | **The University of Canterbury**, in progress
PhD in ELECTRICAL & ELECTRONIC ENGINEERING
*Thesis Topic:* **Mobile Robot Localisation on Complex Geometries**
*Ongoing*

**2014-2019** | **The University of Canterbury**, GPA: 8.44/9.00
Bachelor of Engineering (Hons) in ELECTRICAL & ELECTRONIC ENGINEERING
*Honours Project:* **A low-cost, LIDAR-based, SLAM-implementing autonomous rover**
EPCA Top Achiever Award (**final year 1st in class**)
Bachelor of Science in PHYSICS & COMPUTER SCIENCE
Focus on low-level/structured C programming, simulations, and robotics

## Proficiencies

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| Programming Languages | Proficient with **C**, for both user application and embedded contexts<br>Proficient with **Python**, for both scripting and scaled software<br>Some experience With **C++**, **Java**, and **MATLAB** |
| Embedded Systems | Microcontroller Architectures<br>    **ARM**, **PIC**, **AVR**<br>Protocol design using standard interfaces (both via APIs and bitbashing)<br>    **UART/USART**, **SPI**, **I²C**, **CANBUS** |
| Parallel Programming | Experienced writing threaded C programs<br>    **pthreads**, **OpenMP**<br>Some experience writing multi-process C programs<br>    **POSIX**, **MPI** |
| Data Analysis | Statistical analysis, modelling and simulation<br>**Python** with **scipy** and **numpy** |
| Computer Literacy | Operating Systems: **Linux**, **Windows**<br>Automation: **make**, **bash**. **cmd** on Windows<br>Networking: Direct **POSIX** hooks in C and Python, **nanomsg**<br>Presentation: LaTeX, Microsoft Office with **VBA**<br>Version Control: **Git** |
| Miscellaneous | First Aid: Red Cross first aid certificate<br>    Additional specific courses on electrical first aid<br>Scouts NZ Cooksey leadership course<br>    Group dynamics, personality type applications and limitations, conflict diffusion |

## Memberships and Positions Held

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| 2016-*Present* | Member, *IEEE* |
| 2014-*Present* | Member, *Engineering New Zealand* |
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| 2021-*Present* | Quartermaster, *Canterbury Historical Fencing Club* |
| 2018-*Present* | President, *University of Canterbury Mediæval & Renaissance Society* |
| 2019-2020 | Vice President, *University of Canterbury Computer Society* |
| 2017-2018 | Academic Coordinator, *University of Canterbury Computer Society* |
| 2017 | Promotions Manager, *University of Canterbury IET Branch* |
| 2012-2013 | Chairman, *Scouts NZ Lower North Island Venturer Council* |

## Recreational Activities and Interests

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| 2015-*Present* | Historical European martial arts<br>    *German longsword & messer, Scottish & English broadsword, Hutton sabre*<br>    *CHFC Instructor* |
| 2015-*Present* | Wudan kung fu |
| 2010-*Present* | Canoe polo<br>    *2013 Wellington U18 representative squad member* |
| 2003-2014 | Ryukyu kempo karate<br>    **3$^{rd}$ degree black belt** |
| *Intermittent* | Poetry<br>    **2012 NZ Secondary Schools finalist**<br>Surf kayaking<br>Metalwork<br>    *Armoury, jewellery, knifemaking* |