

# Sam SPEKREIJSE

## PERSONAL DATA

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ADDRESS: 31A Kirkwood Ave, Upper Riccarton, Christchurch  
PHONE: +64 27 726 7735  
COURSE OF STUDY: PhD in ELECTRICAL & ELECTRONIC ENGINEERING  
Bachelor of Engineering in ELECTRICAL & ELECTRONIC ENGINEERING  
Bachelor of Science in PHYSICS & COMPUTER SCIENCE

## WORK EXPERIENCE

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| JUL 2017-Present  | Teaching Assistant at THE UNIVERSITY OF CANTERBURY, Christchurch<br><i>Tutelage, Marking and Administration</i><br>Teaching assistant for a 200-level C programming course, 300/400-level embedded systems/signal processing courses, and a 400-level probabilistic robotics course. This involves explaining concepts to students in lab sessions, lecturing small groups, exam marking, and test invigilation. |
| MAR 2019-AUG 2019 | Research Assistant at THE UNIVERSITY OF CANTERBURY, Christchurch<br><i>Photogrammetry, Object Detection, Mobile Robotics</i><br>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<br><i>Embedded C Development, Embedded Hardware Development</i><br>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<br><i>Embedded C Development</i><br>Developed drivers for I <sup>2</sup> C 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<br><i>Embedded C Development</i><br>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<br><i>Java Development, Embedded C Development</i><br>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<br><i>General Administration, Dispatching</i><br>Helped maintain the national grid asset records, and allocated contractors to job requests.  |

## EDUCATION

2019-Present	<b>The University of Canterbury</b> , in progress PhD in ELECTRICAL & ELECTRONIC ENGINEERING <i>Thesis Topic: Mobile Robot Localisation on Complex Geometries</i> <i>Ongoing</i>
2014-2019	<b>The University of Canterbury</b> , GPA: 8.44/9.00 Bachelor of Engineering (Hons) in ELECTRICAL & ELECTRONIC ENGINEERING <i>Honours Project: A low-cost, LIDAR-based, SLAM-implementing autonomous rover</i> EPCA Top Achiever Award (final year 1 <sup>st</sup> in class) Bachelor of Science in PHYSICS & COMPUTER SCIENCE Focus on low-level/structured C programming, simulations, and robotics
2009-2013	<b>Wellington College</b> Headmaster's Award for exemplary service
INTERSPERSED	Red Cross first aid certificate Scouts NZ Cooksey leadership course

## PROFICIENCIES

PROGRAMMING LANGUAGES	Proficient with <b>C</b> , for both user application and embedded contexts Proficient with <b>Python</b> , for both scripting and scaled software Some experience With <b>C++</b> , <b>Java</b> , and <b>MATLAB</b>
EMBEDDED SYSTEMS	Microcontroller Architectures <b>ARM</b> , <b>PIC</b> , <b>AVR</b> Protocol design using standard interfaces (both via APIs and bitbashing) <b>UART/USART</b> , <b>SPI</b> , <b>I<sup>2</sup>C</b> , <b>CANBUS</b>
PARALLEL PROGRAMMING	Experienced writing threaded C programs <b>pthread</b> s, <b>OpenMP</b> Some experience writing multi-process C programs <b>POSIX</b> , <b>MPI</b>
DATA ANALYSIS	Statistical analysis, modelling and simulation <b>Python</b> with <b>scipy</b> and <b>numpy</b>
COMPUTER LITERACY	Operating Systems: <b>Linux</b> , <b>Windows</b> Automation: <b>make</b> , <b>bash</b> . <b>cmd</b> on Windows Presentation: <b>LaTeX</b> , Microsoft Office with <b>VBA</b> Version Control: <b>Git</b>

## MEMBERSHIPS AND POSITIONS HELD

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

## RECREATIONAL ACTIVITIES AND INTERESTS

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2015-Present	Historical European martial arts <i>German longsword &amp; messer, Scottish &amp; English broadsword, Hutton sabre</i>
2015-Present	Wudan kung fu
2010-Present	Canoe polo <i>2013 Wellington U18 representative squad member</i>
2003-2014	Ryukyu kempo karate <b>3<sup>rd</sup> degree black belt</b>
Intermittent	Poetry <b>2012 NZ Secondary Schools finalist</b> Surf kayaking Metalwork <i>Armoury, jewellery, knifemaking</i>