

Jacobus Lock, PhD

Motivated, dynamic engineer seeking new, exciting opportunities

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Education

- 2016 – 2020 **PhD in Computer Science**, *University of Lincoln*, Lincoln, UK.
This project attempts to combine machine learning, human-machine interfacing and computer vision in a novel way to produce an indoor navigation system for the visually impaired can guide a person to a target object that is placed in an unknown location. Project website: lcas.github.io/ActiVis
- 2014 – 2015 **Master of Mechatronic Engineering**, *Stellenbosch University*, Stellenbosch, South Africa.
This project successfully determined the pose accuracy of a drone in flight in the outdoors with computer vision and machine learning regression techniques. The resulting error covariance matrix was integrated into the drone's control model. Report available at: bit.ly/2wjp7q0
- 2010 – 2013 **Bachelor of Mechatronic Engineering**, *Stellenbosch University*, Stellenbosch, South Africa.

Work Experience

- 2020 – Present **Post-Doctoral Research Fellow**, *University of Lincoln*, Lincoln, UK.
PDRA for the LASERBOOM project. Responsible for mounting and collecting LIDAR, IMU and GNSS data to be used in an agriculture robot for localisation and spray-boom control. Also built a model to estimate the shape of a crop canopy with LIDAR data to enable the spray boom to avoid hitting and damaging the crop.
- 2019 – 2020 **Research Assistant**, *University of Lincoln*, Lincoln, UK.
RA for the NCNR project which is looking into integrating autonomous robots in a nuclear power plant. My responsibilities included mounting robotic arms on a mobile platform and building a simulation model for the resulting model.

Projects

- Home Server Building a home server with leftover PC parts to host my web services (Git, webpage, etc.) and store all my data and records. This is done in an effort to take back control over my own data while expanding my knowledge on networking and web hosting.
- Biltong Dryer Making a dryer I can use to make biltong (delicious South African snack). An Arduino controls a fan and heat element to regulate the box's climate so that you can better control the biltong's dryness and taste in different climate conditions.
- NFCPay Designed and implemented a cashless vending machine that allows purchases to be made using QR codes, NFC or student ID authentication, and deployed a remote server to track and encrypt all transactions.
- EchoLocate Developing a geo-tracker app that listens to the environment for ultrasonic trigger cues and logs the geo-location once such a cue is detected.
- PiLock Created a centralised lock control system where a user can control the status of a group of locks with a Android phone and uses a back-end server for authentication and user logging.
- TrainTown Built a Raspberry Pi-based controller for a model town-train system. Controlled components include > 1000 RGB LEDs, 5 DC motors and 10 OLED screens. Everything is controlled via a web interface.

Technical Skills

Strong Android (SDK and NDK), Java, C\C++, Python, Git, Matlab, Latex
Knowledgeable Django, Kotlin, Bash, embedded systems, Rust, web hosting, Docker

Languages

Afrikaans Native
English Native, raised in bilingual household
German Basic, learning

Hobbies and Interests

Travelling, history, economics, hiking, reading, cooking.

References

Available upon request.