# Jackson Ayling-Campbell

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## *Education*

*Auckland, New Zealand* — *The University of Auckland* — *2018-2022*

- **Degree:** Bachelor of Engineering (Honours) in Software Engineering.
- **Progress:** Completed all course requirements. Expected graduation date: September 2022
- **GPA** by year: 7.5 / 8 / 7.75 / 8.5
  - Member of the 2021 Dean's honours list
- Noteworthy **courses:**
  - COMPSCI 760 – Data Mining and Machine Learning: **A+** (First in class)
  - COMPSCI 773 – Intelligent Vision Systems: **A+**
  - SOFTENG 700A/B – Research Project: **A** (See "Projects")

## *Work Experience*

Computer Vision Intern – *Beca* — *Nov 2020 – Feb 2021*

- Worked with 2 other interns to prototype a factory asset detection tool for integration with FACILITYtwin.
- Lead development and evaluation of deep models, such as YOLOv3, using Python and PyTorch.
- Primary front-end developer for web platform which was developed using ReactJS and Bootstrap.js.
- Conducted frequent code reviews of peers' work using Azure DevOps, and managed codebase using Git.
- Final product consisted of front-end labelling and detection visualisation platform which interfaces with Python backend to retrieve detections. Work received positively by supervisors – exceeded expectations.

Research Assistant – *Strong AI Laboratory (SAIL)* — *Nov 2021 – Feb 2022*

- Researched the field of continual learning, specifically concerning deep learning for computer vision.
- Programmed a CL testing suite using Python and PyTorch, built on top of existing CL frameworks.
- Used this framework to develop a novel CL method, utilising an SVM loss function together with example replay and a deep neural network to help prevent forgetting on image recognition benchmarks.
- Developed method was shown to have competitive results with other methods in the literature.

## *Projects*

Automatic Apple Yield Estimation - BE (Hons) project:

- Project completed as a part of my degree, where my partner and I developed an end-to-end automatic apple yield estimation pipeline consisting of instance segmentation, pose estimation, and counting stages.
- Involved the researching of cutting-edge instance segmentation and pose estimation techniques.
- Development of the pipeline was done using Python, NumPy and PyTorch, on a WSL2 Ubuntu VM.
- Wrote a paper summarising the findings of our project (available upon request).

YOLOv3 Object Detection algorithm (link):

- Project where I Implemented the YOLOv3 Object Detection algorithm from scratch.
- Uses the same neural network architecture and pre-trained weights from the original YOLOv3 model.
- Uses OpenCV, PyTorch and NumPy for the neural network and overhead processing, e.g. IoU and NMS.
- Improved my proficiency with the typical Deep Learning stack (particularly for image processing).

## *Skills*

Languages:

- *Proficient*: Python, JavaScript, HTML and CSS, Java

Other:

- PyTorch
- NumPy
- OpenCV
- Neural Networks & Machine Learning
- Data structures & algorithms
- Git and GitHub version control
- Angular
- React.js and Bootstrap.js