SINCLAIR HUDSON

2nd Year Computer Science Student at the University of Waterloo

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EXPERIENCE

LiDAR Perception Researcher, Huawei

Jan '20 - Apr '20 (Full-time)

- Managed a compute server with 8 GPUs, using **Docker** to continuously run and document deep learning experiments over a 4-month period.
- Built DBLiDARNet and Focal Loss from scratch in **PyTorch** to use in LiDAR semantic segmentation experiments.
- Wrote a **summary paper** on current LiDAR point cloud segmentation techniques, summarizing 12 papers and highlighting useful contributions.
- Analysed the **SemanticKITTI** dataset to produce optimal class loss weights, increasing mIoU by 2%.
- Wrote functions to generate and display per-class IoUs, sample predictions, and confusion matrices on TensorBoard.
- Wrote a data loader to spatially align sequential LiDAR scans for temporal pipelines, based on IMU data and transformation matrices.

Perception Technical Lead, Watonomous

May '19 - present (Part-time)

- Trained an **EfficientNet**-based image segmentation network on the **A2D2** dataset, with the objective of roadline detection.
- Led small groups of core members on certain perception objectives in two week development cycles, using **Jira and Confluence**.
- Trained **YOLOv3** model to detect location and state of traffic lights, enabling the self-driving car to obey traffic light highway safety laws.

Full Stack Developer, Wawanesa Insurance

May '19 - Aug '19 (Full-time)

- Conceptualized and created proof-of-concept innovation projects using agile methodology, presenting ideas and prototypes weekly.
- Created a system that used sentiment analysis to determine the public's opinion of the company on Twitter using **AWS**.
- Built a system that searches Instagram for posts relevant to insurance claims and displays them on an intuitive dashboard. The post's relevance is determined by a self-trained Tensorflow **BERT transformer** model.
- Built a mobile app in **React Native** for both iOS and Android using accelerometer and GPS data to analyse user driving habits.

PERSONAL PROJECTS

Conduct: Gesture Controlled Media Playback

- Built an intuituve gesture-controlled interface using webcam video.
- Built, trained, and tested YOLOv3 network in **Tensorflow** to detect and classify hands into 6 different gesture states.

VM: A VIM clone implemented in C++

- Designed a very adaptable architecture using object-oriented design patterns and **SOLID principles**.
- Implemented 56 unique VIM commands, including macros and unbounded undos, achieving a grade of 104%.

LANGUAGES

Languages: Python, C++, C, Javascript, Java, LaTeX, HTML & CSS

Frameworks: PyTorch, OpenCV, TensorFlow, Numpy, React, Node.js, ROS, Docker

Tools: AWS (SageMaker, EC2, Lambda, DynamoDB), Jetbrains Suite, Adobe Suite, Autodesk Suite, Linux, VIM

SKILLS & TRAITS

Avid, quick learner

Passionate & hard working

Always up for a challenge

Creative & innovative

LEADERSHIP & AWARDS

Venturer Company President

Governor General's Bronze Medal

Chief Scout's Award, Scouts Canada

University of Toronto Book Award

Bronze Cross & Standard First Aid

INTERESTS

Rock climbing

Visual art & design

Origami

Archery