Calvin **Ku**

Computer Vision Engineer · Software Engineer · PhD (Major in Computer Science)

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Summary

A highly motivated candidate educated in both Computer Science, Computer Vision and Robotics, passionate in implementing innovative technology. Capable of leadership and proficient in a range of modern programming languages including Python, JavaScript, Java and C++.

Education

National Tsinghua University — *Hsinchu, Taiwan*

PhD. in Computer Science — *Feb. 2020 - Exp. Sept. 2024*

- Current research focus on Computer Vision

Hong Kong University of Science and Technology — *Hong Kong*

B. Eng in Computer Science and a Robotics Minor — *Sept. 2015 - May 2019*

- Member of HKUST Robotics Team
- Specialize in Artificial Intelligence and robotics

Work Experience

Academia Sinica (Prof. Ku, Lun-Wei) — *Nangang, Taiwan*

Part-time Research Assistant — *Jun. '22 - Present*

- Building an ice skating data collection system that consists of a line chat bot, website user interface and back-end serve
- Designing and modifying existing 3D human pose estimation model for ice skating poses

Giant Bicycle Project — *Hsinchu, Taiwan*

Researcher — *Sept. 2021 - Present*

- Experimenting and training biker's 3D pose estimation using one RGB camera
- Developing a 3D human pose estimation model for predicting biker's posture using a single camera

now-ai — *Remotely*

Part-time Software Engineer — *Oct. 2020 - Present*

- Developed a Bidirectional Encoder Representations from Transformers (BERT) AI that summarize news article and categorize news
- Created APIs for Microsoft team to implement our functionality in their Microsoft Teams application
- Coded website interface using ReactJS
- Deployed and maintained cloud infrastructure on Google cloud

Industrial Technology Research Institute — *Hsinchu, Taiwan*

Part time Researcher — *Oct. 2020 - Jan. 2021*

- Developed a website for sports analysis using self-recorded videos
- Investigated on 2D and 3D human pose estimation from a single RGB camera
- Used VICON, a motion capture device, for 3D posture data collection

National Tsinhua University: Introduction to Programming I Course — *Hsinchu, Taiwan*

Teaching Assistant — *Fall 2020 & Fall 2021*

- Design C coding homework and assignment

Eureka Fintech Limited — *New Taipei City, Taiwan*

Engineering Consultant — *Sept. 2019 - Present*

- Helping system integration and development

National Tsinhua University: Robotic Navigation and Exploration Course — *Hsinchu, Taiwan*

Teaching Assistant — *Feb. 2020 - May 2020*

- Assisted in creating an assignment for student to implement model free reinforcement learning for map-less navigation
- Implemented AlexNet into NVIDIA Jebot for obstacle detection and line tracing

Taiwan Semiconductor Manufacturing Company Limited (TSMC) — *Hsinchu, Taiwan*

Big Data and Analytics Program Internship — *June. 2017 - August. 2017*

- Identified IR drop hotspot in board design before manufacturing.
- Used Python sklearn to build a cluster wise regression to improve tail error for their static IR drop program.

Skills

Programming	Java, Python, C++, Javascript, Spring Framework/Boot, NodeJS, Django
DevOps	AWS, Docker, Google Cloud,CircleCI, Bash scripting
Machine learning library	pytorch, tensorflow, sklearn
Tools	Git
Languages	English, Mandarin

Honors & Awards

2019	**Nominated**, Best Final Year Project	*Hong Kong*
2016	**Finalist**, Robocon 2016 Hong Kong Contest	*Hong Kong*
2007	**1st Place**, World Robot Olympiad North Division	*Taiwan*
2008	**1st Place**, World Robot Olympiad North Division	*Taiwan*
2010	**1st Place**, World Robot Olympiad National	*Taiwan*

Projects

VR Table Tennis Training and Web Based Pose Visualization and Analysis System

Hong Kong

Product Manager — *March 2021 - Present*

- Developed a VR system that uses visual and audio feedback to teach table tennis beginners.
- Created a web-based 3D pose visualization and analyzation that provided tools for coaches to annotate students' mistake for each training session.

Final Year Project: Visual Programming Language for Backend Web development

Hong Kong

Programmer — *May 2019*

- Created visual abstraction of JavaScript functions as building blocks that provide interface for database access and invoking web API
- Chosen as one of the best FYP projects

Introduction to Embedded System: Smart Medical Watch

Hong Kong

Programmer — *May. 2019*

- Programmed STM32F1 for steps, calories, fall detection, clock display, heart rate and SPO2 calculation and visualization
- Constructed a server for data storage and visualization through WiFi from STM32

Cloud Computing Project: Doodle Generation

Hong Kong

Programmer — *Dec. 2018*

- Trained and build GAN models and self-attention GANs using TensorFlow from Draw it! (Dataset, provided by Google's Quick Draw)

Computing in Industrial Applications for Kerry Logistics

Hong Kong

Programmer — *May. 2018*

- Build an Optical Character Recognition (OCR) system that assigns incoming cargo boxes to correct destinations
- Lead a team of 5 and won the competition and best design award

Fundamental of AI: Poker Game Induction

Hong Kong

Programmer — *Dec. 2017*

- Programmed a supervised learning system that could automatically induce the rules of a poker game

Software Engineering Project: LINE Chatbot

Hong Kong

Programmer — *Dec. 2017*

- Created a Student Helper Chatbot for freshman

International Conference

Monocular 3D Human Pose Estimation with Domain Feature Alignment and Self Training

ICME 2022

Yan-Hong Zhang, **Calvin Ku**, Min-Chun Hu, Hung-Kuo Chu — *March 2022*

Assist Home Training Table Tennis Skill Acquisition via Immersive Learning and Web Technologies

IEEE VR 2022 (Poster)

Jian-Jia Weng, Yu-Hsin Wang, **Calvin Ku**, Dong-Xian Wu, Yi-Min Lau, Wan-Lun Tsai, Tse-Yu Pan, Min-Chun Hu, Hung-Kuo Chu, Te-Cheng Wu — *July 2022*