Andy Jung
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Education

University of Waterloo — Waterloo, ON
Bachelor of Mathematics in Statistics and Combinatorics & Optimization — *Sep 2022 – Apr 2026*

- **Relevant courses:** Stochastic Processes, Calculus 3, Object-Oriented Software Development, Applied Linear Models, Computational Stats & Analysis, Sampling and Experimental Design, Mathematical Statistics

Experience

Software Developer — Aug 2024 – Sep 2024
Standard Data (Y Combinator) — *Remote*

- Researched a **Python** web scraping tool for Department of Defense, to aggregate job postings into a single database
- Designed and implemented a responsive website using **React** and **Node.js**, to enhance **UX** through intuitive navigation

Machine Learning Engineer — Jan 2024 – Apr 2024
GoodGang Labs — *Remote*

- Developed and researched a baseline model utilizing audio input to generate corresponding body gestures
- Produced synthetic data in **BVH**, **blendshape**, ensuring high-quality training datasets for deep learning models
- Conducted thorough testing and debugging of programs using **Python**, successfully identifying and eliminating critical errors, reducing debugging time by **30%** and enhanced overall software reliability
- Managed the development of deep learning models for 3D avatars, improving the precision and efficiency of facial expression and body gesture recognition by **25%**, resulting in more lifelike avatars and enhancing user interaction quality
- Implemented containerization with **Docker** to manage over **50** packages, facilitating scalable deployment and streamlining collaboration across teams while ensuring consistent environments and reducing setup time
- Authored comprehensive documentation for the project on the **GitHub** repository, facilitating smooth onboarding for new team members and enhancing project transparency, improving overall collaboration within the team

Projects

Text2Avatar Data Generation System | *Python, Shell* — Jan 2024 – Feb 2024

- Designed and developed a program that creates synthetic data sets by extracting information from video inputs
- Accomplished the integration of **OpenAI's API** to perform **Speech-to-Text (STT)** for video inputs, **Google's Could Translation API** for language detection and translation, and extraction of probabilities for **5** distinct emotional measures
- Applied **MediaPipe Face Landmarker** to detect face movements in video inputs, capturing **52 facial points**, and generated over **200+** blendshape files in **JSON** format, providing detailed data for facial animation and analysis
- Integrated **MocapNET** for high-resolution motion capture, generating a **BioVision Hierarchy (BVH)** file capable of detecting over **65** joints in human movement, operating at around **350** frames per second
- Created a **Python** module to visualize and render created **BVH** files to ensure accuracy of generated outputs

Synthetic Data Generator | *Python* — May 2023 – Jul 2023

- Developed a synthetic data generator for avatar-communication app using **generative adversarial network (GAN)**
- Utilized open-source projects such as **OpenCV** and **Next3D** to achieve accurate data preprocessing
- Generated **100,000+** frames of synthetic data, involving a broad spectrum of age, race, and gender variations
- Detected and generated **blendshapes** and **bounding box** for each frame, enabling modification to the data
- Used **Docker** to streamline deployment process, ensuring consistency and scalability across different environments

GoAI | *Python, Keras, Numpy* — Nov 2022 – Feb 2023

- Developed a machine learning algorithm to play Go at a professional level using **Keras** and **numpy**
- Performed simulations on **50** games of Go, simulating over **3000** moves using the **Monte Carlo Tree Search** algorithm.
- Effectively employed the **UCT formula** to select optimal moves, contributing to strategic insights into game dynamics
- Successfully utilized Convolutional Neural Network to **increase the accuracy of each move by 200%**
- Created an encoder capable of converting game state into **Numpy Array** enabling the use of CNN
- Achieved **99.18% accuracy** trained based on past data collected from professional Go games from 2001 - 2019

Technical Skills

Languages: Python, C++, R, SQL (Postgres), JavaScript, HTML/CSS
Frameworks & Libraries: pandas, NumPy, Matplotlib, Keras, TensorFlow, PyTorch, scikit-learn, React, Node.js
Developer Tools: Git, Bash, Postman, Docker, Notion, AWS, OpenAI API, MediaPipe, Caffe