William Wang

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EDUCATION

Columbia University, Fu Foundation School of Engineering and Applied Science — **New York, NY**
Bachelor of Science, Electrical Engineering — *August 2022 – Present*
Expected Graduation: May 2027

PROJECTS

Diffusion Policy on Tactile Hand — **New York, NY**, Present

- *Skills: Reinforcement Learning, Diffusion Models*
- Working at Matei's ROAM Lab at Columbia to implement a Diffusion Policy trained from human demonstrations on a tactile hand

SNAP-3DAR Video to 3D Model Application — **Stanford, CA**, 2025

- *Skills: NeRF, NVDiffRec, COLMAP, AR, SLAM*
- Designed and deployed a pipeline that turns videos into 3D meshes (with textures baked) using NVDiffRec
- By implementing AR app to replace COLMAP by using built-in Inertial and Visual SLAM to decipher camera location, we saw a decrease in computation time of over 50%, especially with objects in plain backgrounds
- Finetuned NVDiffRec hyperparameters to produce amazing looking models in just ~10 minutes

Clash Royale AI — **New York, NY**, 2024

- *Skills: PPO, Computer Vision*
- Implemented a non-intrusive Clash Royale AI, that uses visual inputs from the game to train the model
- Model composed of a pretrained ResNet-18 concatenated with other information about the game extracted using a small YoloV5 model to feed into a PPO network, which produces 2 discrete action domains
- Beat in-game AI 75% of the time; due to simulation being real-time (non-intrusive), hard to make progress

SAC and TD3 Implementation on "Garry" — **New York, NY**, 2024

- *Skills: Reinforcement Learning, Mujoco, Simulation, 3D CAD*
- Designed and built an 8 DOF bipedal robot called "Garry"
- Ported Garry to Mujoco simulator and implemented SAC and TD3 on Garry to try to establish a stable gait
- No stable walking gait was established; however, a semi-stable gait allowed Garry to walk 1.1 meters

Personal Website — **New York, NY**, 2023-2024

- *Skills: Next.js , AWS, Three.js*
- Designed and deployed a Next.js site to AWS using SST
- Built an interactive "3D Garage" interface with Three.js, allowing the audience to view my Solidworks STL files in great detail; created immersive experience showcasing my robot "Garry"
- Deployed a blog website designed and implemented by me using AWS DynamoDB
- Blog website features secret authentication system implemented using JSON Web Tokens, and a fully working WYSIWYG editor (only visible to admins which is me) to allow for me to post new blogs

Mobile Driving Simulator — **Los Angeles, CA**, 2023

- *Skills: Rust, Web Assembly, Typescript*
- Designed and implemented a driving simulator during my internship at MeetKai using Rapier.js
- Fine-tuned driving experience to provide a fun but challenging interface to the user
- Research and implemented Pacejka's magic formula to provide realistic tire physics behaviour

Diffraction Grating Image Analysis — **USC, CA**, 2021

- *Skills: Python, Image Analysis*
- Analysed thousands of diffractions grating images using Python libraries such as SciPy, NumPy, Matplotlib

PUBLICATIONS

He, J., Kovach, A., Wang, Y., Wang, W., Wu, W., & Armani, A. M. (2021). Stretchable optical diffraction grating from poly(acrylic acid)/polyethylene oxide stereocomplex. *Optics Letters, 46*, 5493–5496.

ADDITIONAL SKILLS AND INTERESTS

- **Technical Skills:** Python, Java, C, C++, Figma, SolidWorks CAD, Arduino, JavaScript, Typescript
- **Languages:** English (Fluent) and Mandarin (Conversational)

Personal Website: **wwang22.com**