Tianrun (Martin) Ke

346-247-6729 | tianrunk@andrew.cmu.edu | GitHub: https://github.com/MartinKe71

EDUCATION

Carnegie Mellon University, Entertainment Technology Center (ETC) — **Pittsburgh, PA**
Master of Entertainment Technology (MET) — *Expected May 2022*

Rice University, George R. Brown School of Engineering — **Houston, TX**
B.S Electrical and Computer Engineering (BSEE) — *May 2020*

- **Major GPA:** 3.90/4.00
- **Honors:** Cum Laude, President Honor Roll

Relevant Coursework: Building Virtual World, Matrix Analysis, Linear Algebra, Computer Vision, Algorithmic Robotics, Machine Learning, Introduction to Computer System, Learning from Sensor Data, Introduction to Program Design, Parallel Programming

SKILLS

Programming Languages: C, C#, C++, Java, Python, React, Swift, MATLAB, Verilog
Operating Systems: Windows, Ubuntu/Debian Linux, Mac OS
Platforms: Unity3D, Unreal 4, AWS, Dagger, ARKit3, UIKit

EXPERIENCE

Amazon.com Services LLC — **Seattle, WA**
Software Development Engineer Intern; ReCommerce Pricing & Listing Team — *May 2020 – August 2020*

- Designed and pushed into production an internal self-service platform to refresh, re-list, and de-list existing merchandise in Amazon's resale warehouses in North America, Asia, and Europe for business teams.
- Railed the platform around with permission guard so that only certain user groups have access to the tool.
- Built back-end using Dagger and native AWS technologies, including Lambda, CloudFormation, API Gateway, etc.
- Set up front-end with React coupled with Redux for state management.

General Electric Healthcare — **Milwaukee, WI**
Software Intern; OnWatch Rule Authoring Team — *May 2019 – August 2019*

- Wrote a plugin in the OnWatch remote monitoring system for MR machines using K-Means Clustering to check the signal-to-noise ratio of 14 coils in the pre-scan session and categorize error types.
- Optimized the data structure and algorithm of the existing plugin to reduce the average runtime from 230 seconds to 75 seconds and the failure percentage from 4% to 0.2%.
- Collaborated with company's engineers to test and deploy the plugin for MR machines in the United States and Canada region.
- Developed python toolkit functions to send queries to the online database using Requests library and tested with Postman.

RNG (Rice Network Group) ASTRO (Autonomous Tether-less Networked Drone) — **Houston, TX**
Research Assistant; Advisor: Edward Knightly — *May 2018 – August 2018*

- Developed the drone firmware for autonomous flight functions and improved existed firmware for better performance.
- Wrote autonomous drone missions to detect transmitted signal strength, optimize flight path processing real-time data, record videos, and avoid obstacles during the flight. Successfully loaded them on the drones for field experiments.
- Streamed real-time videos and tracked objects with computer vision using the OpenCV library on the drones.
- Installed streaming camera, gas sensors, IRIS/RTL SDR (radio frequency sensors), and lidar sensors on the drones by connecting GPIO Ports on Raspberry Pi and UART Port on Arduino to achieve wide range of functionalities.

ACADEMIC PROJECTS

Building Virtual World — **Pittsburgh, PA**
Programmer; ETC — *August 2020 – Present*

- Design and develop games in two-week rounds that will happen five times throughout the semester.
- Collaborate with a cross-disciplinary five-person team, build prototypes, and iterate rapidly.
- Developed on multiple platforms, including PCs, webcam, and microphones.
- Work in Unity on gameplay, level design, and visual effects.

Augmented Reality App with Occlusion — **Houston, TX**
Software Engineer; Self-Proposed Senior Design Project — *August 2019 – May 2020*

- Developed an iOS AR app that provides real-time object occlusion and supports multiple virtual objects display.
- Analyzed the physical relationship between virtual objects and real environment with FCRN depth estimation model and DeepLabV3 image segmentation model.
- Incorporated dragging, rotating, and deleting features on virtual objects with ARKit3.

Autonomous Movie Genre Classifier — **Houston, TX**
Software Engineer; ELEC 301: Signals, Systems, and Learning — *November2018 – December 2018*

- Classified movie genres according to poster, title, time length, year, and IMDB scores using machine learning techniques.
- Analyzed correlation between given features and the classified results in training data using random forest classifier, modified Resnet neural network based on the analysis, and incorporated prediction results of Resnet and random forest using ensemble learning.
- Ranked the first out of fifteen teams in the class by achieving a 75% accuracy rate on Kaggle test data.