Shu-Chuan Hsu

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Education

M.S. Rice University **Aug. 2022 – Dec. 2023 (Expected)**

Master of Computer Science *Houston, Texas*

- Selected Courses: Database System Implementation, Secure and Cloud Computing, Computer System Architecture, Intro to Database System, Web Development

B.S. National Taiwan University (NTU) **Sep. 2017 – Jan. 2022**

Department of Mechanical Engineering, GPA: 3.96/ 4.0, Ranking: 7/186 (4%) *Taipei, Taiwan*

- Honors: 2020 Spring Dean's List
- Selected Courses: Data Structure and Advanced Programming, Algorithm, Computer Architecture, Machine Learning, Computer Vision, Introduction to Computer Networks

Skills

Programming: C/C++, Python, C#, JavaScript, MATLAB, Go, Verilog, Shell Scripting, HTML/CSS, LaTeX

Web Frameworks: React, Angular, Node.Js, JQuery, Express, Oauth, Flask, MongoDB, PostgreSQL, Neo4j

Packages/Tools: GCP, OpenCV, PyTorch, Pandas, NumPy, Scikit Learn, GitHub, Git

Experience

AIIU Lab, CITI, Academia Sinica **Jan. 2021 – Jan. 2022**

Research Assistant *Taipei, Taiwan*

- Developed an **interactive web application** that enabled users to infer our model online and provided a platform for collecting feedback from over **100 individuals**.
- Integrated training data into the desired space and restructured the generation pipeline to improve the robustness.
- Proposed a novel training method that leveraged **cycle consistency** and **unsupervised learning** to train a GAN model for retrieving genetic information from images.

MediaTek **Jul. 2021 – Sep. 2021**

Algorithm Intern *Hsinchu, Taiwan*

- Developed an **alpha-matte generating tool** that reduced the time required for marking image ground truth by **50%**.
- Enhanced the **quality of matting pictures by 20%** in F2 score through self-designed pipeline.
- Designed a **matting algorithm** with the **self-supervised** training manner and achieved outstanding performance in both qualitative and quantitative tests **in real time**.

Test Research, Inc. (TRI) **Jul. 2020 – Aug. 2020**

Software Engineer Intern *Taipei, Taiwan*

- Designed an algorithm to de-noise and construct high-quality 3D structures from raw lidar detection data.

Selected Projects

Database System | *C, C++, Operating System* **Jan. 2023**

- Developed a single-user database system handling file management, transaction processing, and optimization issues.
- Enhanced efficiency by implementing the **Least Recently Used (LRU) Replacement Algorithm** in the memory buffer to streamline page access.

Rice Book | *JavaScript, MongoDB, ExpressJs, ReactJs, NodeJs, Oauth* **Sep. 2022**

- Constructed a facebook-like **web platform** supporting posts, comments, headlines features by **MERN stack** skills.
- Integrated with the **Google OAuth API** and **Google Cloud Platform (GCP)** to build and merge personal accounts.
- Applied **unit testing techniques** covering of over **90%** of the lines of code, ensuring a high level of code quality and reliability.

Video Frame Interpolation | *Python* **Jun. 2021**

- Implemented a hybrid approach using a **non-learning-based network** and a **deep-learning-based network** and applied warping techniques to interpolate intermediate frames.
- Awarded Second Prize in the final project competition associated with *MediaTek* among 15 teams.

Web Server | *Go* **Jun. 2021**

- Constructed a **secure web server** interpreting **HTTP request messages** and handling **concurrent requests**.

Publication

- "KinStyle: A Strong Baseline Photorealistic Kinship Face Synthesis with An Optimized StyleGAN Encoder", Asian Conference on Computer Vision 2022.
- "StyleDNA: A High-Fidelity Age and Gender Aware Kinship Face Synthesizer", IEEE International Conference on Automatic Face and Gesture Recognition 2021.