Zhongqian Duan

henry.duanzq@gmail.com | zlzq-duanzq.github.io | zlzq-duanzq | duanzq

Education

University of Michigan - Ann Arbor Aug. 2022 – Dec. 2023 (Expected)
M.S.E. in Computer Science and Engineering Ann Arbor, MI

University of Michigan - Ann Arbor Aug. 2020 – May 2022
B.S.E. in Computer Science Ann Arbor, MI

- Major GPA 3.98 / 4.0 | **Honors**: Dean's List, University Honors, James B. Angell Scholar
- Courses: Data Structures & Algorithms, Computer Orgnization, Operating Systems, Database Management Systems, Machine Learning, Computer Vision, Deep Learning for CV, Computer Game Design

Shanghai Jiao Tong University Sep. 2018 – Aug. 2022
B.S.E. in Electrical and Computer Engineering Shanghai, China

- Major GPA 3.71 / 4.0 | **Honors**: Outstanding Student Scholarship of SJTU

Internship Experience

NIO - Autonomous Driving System May 2021 – Aug. 2021
Computer Vision Research Intern Shanghai, China

- Optimized a **3D Object Tracking Network** for autonomous vehicles (improve the precision by 4%).
- Proposed a light-weight CNN in **PyTorch** to predict lens distortion parameters and remove distortion.
- Utilized pre-trained models with different backbones, such as *MaskRCNN*, to detect vehicles and lane lines to test the entire autonomous driving system with on-screen videos.

Projects

FantasyAR: Machine Learning based AR Game May 2022 – Aug. 2022
Capstone Peoject | SJTU FantasyAR

- Built a full stack Android AR fighting game using **Unity**, where player can encouter enemy on mini-map.
- Applied the Natural Language Processing model *Recognissimo* to implement the voice-controlled skills.
- Implemented a back-end server and a database with **Node.js** to store information such as GPS locations.

Asylum 7: 3D Horror Game Feb. 2022 – Apr. 2022
Capstone Project | UMich Asylum 7 Game Portfolio

- Built a first-person horror and escape game with multi-levels using **Unity**, and participated in the UM + EMU Game Design Showcase
- Designed the UI/UX for the shop and battle scenes using **Kotlin** on Android Studio.
- Implemented the core features of the game with **C#**, including task management, enemy AI and navigation, detection of darkness, controls of trap and game story progression.

MEMO: Online Story Cards MERN project

- Built a full stack App with responsive home and search function with **MongoDB, Node.js, and React.js**.
- Implemented the login system to allow **CRUD** operations, and deployed on Heroku and Netlify.

Operating System Project OS project

- Implemented a thread library, a virtual memory manager, and a network file server with **C++**.

Database Project - Fakebook DB project

- Designed a database to store information for the fictional social media platform Fakebook.
- Implemented a Java application that executes **MySQL**, and a database structure – **Grace hash join**.

Research Experience

An Improved Method for Full High Definition Demoiréing Fall 2021
Independent research, advised by Dr.Jiong Chen HR-Demoire

- Proposed *netEdge* in **Pytorch** to predict the edge of moire-free images, which can reinforce the base network in low-resolution and select high-freq regions for the refine network (increase PSNR by 2.6%).
- Proposed a image processing pipeline to utilize a pre-trained low-resolution network to high-resolution: Downsample → Demoiré → Multi-Stage Progressive Detail Restoration (increase PSNR by 5%).

Skills

Programming Languages: C/C++, C#, Python, Java, JavaScript, Kotlin, MATLAB
Frontend and Backend: React.js, HTML, CSS, Node.js, MySQL, MongoDB
Tools and Frameworks: Git, LaTeX, Pytorch, Scikit-learn, Mathematica, Unity