Zhongqian Duan

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Education

University of Michigan - Ann Arbor, MI Aug. 2022 – Dec. 2023

- *M.S.E. in* ***Computer Science and Engineering*** | **GPA** 4.0 / 4.0
- Coursework: Computer Networks, Web Systems, Parallel Computing, Natural Language Processing

University of Michigan - Ann Arbor, MI Aug. 2020 – May. 2022

- *B.S.E. in* ***Computer Science*** | **GPA** 3.9 / 4.0 | **Honors**: Dean's List, University Honors, James B. Angell Scholar
- Coursework: Operating Systems, Database Management Systems, Machine Learning, Computer Vision, Deep Learning for CV, Computer Game Design, Computer Security, Parallel Programming with GPUs

Shanghai Jiao Tong University - Shanghai, China Sep. 2018 – Aug. 2022

- *B.S.E. in Electrical and Computer Engineering* | **GPA** 3.7 / 4.0 | **Honors**: Outstanding Student Scholarship

Skills

Programming Languages: C/C++, C#, Python, Java, JavaScript, Matlab, HTML, CSS, React.js, Node.js, SQL
Tools and Frameworks: Git, LaTeX, CUDA, Pytorch, OpenCV, Scikit-learn, Mathematica, Unity, Linux, Docker, AWS

Internship Experience

Rec Room Jan. 2023 – Apr. 2023

Incoming Software Engineer Intern Seattle, WA

- Embedded on the **tool development** team, where works across the client, server, editor and website.

FantasyAR SJTU May. 2022 – Aug. 2022

Software Development Engineer Intern Shanghai, China

- Collaborated with a team of 4 developers to publish a full stack Machine Learning based AR fighting game using **Unity** FantasyAR.
- Applied the Natural Language Processing model **Recognissimo** to implement the voice-control.
- Developed a back-end server with **Node.js** and a database with **MySQL** to store and update in-game data.

NIO May. 2021 – Aug. 2021

Machine Learning Engineer Intern Shanghai, China

- Optimized a **3D Object Tracking Network** for autonomous vehicles, improved the precision by 4%.
- Proposed a light-weight CNN in **PyTorch** to predict lens distortion parameters and remove distortion.
- Utilized pre-trained vision models, such as **MaskRCNN**, with different backbones to detect vehicles and lane lines, and tested for autonomous driving systems on over 2000 on-screen videos.

Software Engineering Projects

Full Stack Website: Online Story Cards Aug. 2022 – Oct. 2022

- Built a full stack website with responsive home and search function with **MongoDB, Node.js, and React.js**.
- Implemented login system to allow **CRUD** operations (post, delete, like) and deployed on **Heroku** and **Netlify**.

Asylum 7: 3D Horror Game Feb. 2022 – Apr. 2022

- Led a team of 5 developers to build a horror, role-playing, escape game using **Unity** and **C#** Asylum 7.
- Planned and executed the project roadmap on **Jira**, and managed the development repo on **GitHub**.
- Implemented the core features with **C#** and **multi-thread**, including task management, enemy AI and navigation, detection of darkness, controls of trap and game story progression.
- Iterated three versions of game mechanics and design (alpha, beta, gold) based on 50 hours of playtests with over 200 players. Participated in UM+EMU Games Showcase (ranked 3rd).

Operating System Simulation Sep. 2021 - Dec. 2021

- Utilized **C++** to implement a thread library (thread, cv, mutex), and a network file server .
- Designed a **virtual memory manager** which managed various application address space.

Research Experience

An Improved Method for Full High Definition Demoiréing Fall 2021

Research Assistant, advised by Dr. Jiong Chen HR-Demoire

- Integrated *netEdge* with **SE block** in **Pytorch** to predict the edge of moire-free images, which reinforces the base network in low-resolution and selects high-freq regions for refine network, and increased PSNR by 2.6%.
- Proposed a 3-stage image processing **pipeline** to utilize a pre-trained low-resolution network to high-resolution: Downsample → Demoiré → Multi-Stage Progressive Detail Restoration, which increased PSNR by 5%.