# Zhongqian Duan

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## Education

**University of Michigan** Ann Arbor, MI
**M.S.E. in Computer Science (GPA: 4.0 / 4.0)** Expected: Aug. 2022 – Apr. 2024
- **Selected Coursework:** Web Systems, Computer Networks, Parallel Computing, Natural Language Processing

**University of Michigan** Ann Arbor, MI
**B.S.E. in Computer Science (GPA: 3.9 / 4.0)** Aug. 2020 – May. 2022
- **Selected Coursework:** Operating Systems, Database Systems, Machine Learning, Computer Vision, Deep Learning for CV, Computer Game Development, Computer Security, Parallel Programming with GPUs

**Shanghai Jiao Tong University** Shanghai, China
**B.S.E. in Electrical and Computer Engineering (GPA: 3.7 / 4.0)** Sep. 2018 – Aug. 2022

## Internship Experience

**Rec Room** Seattle, WA
Software Engineer Intern Expected: Jan. 2023 – Apr. 2023
- Embedded on the **UGC > Logic** team, where works across the client and website for the **VR** gaming startup .
- Created the Trail Component Chip with the CircuitV2 System for Survival the Night in **C#**.

**FantasyAR SJTU** Shanghai, China
Software Engineer Intern May. 2022 – Aug. 2022
- Collaborated with a team of 4 developers to publish a full stack **AR** fighting game using **Unity** .
- Integrated the Natural Language Processing model Recognissimo to implement the voice-control and GoMap for real-time AR location minimap.
- Developed a back-end server with **Node.js** and a database with **MySQL** to store and update in-game data.

**NIO - Autonomous Driving Department** Shanghai, China
Machine Learning Engineer Intern May. 2021 – Aug. 2021
- Optimized a 3D Object Tracking Network for autonomous vehicles, improved the precision by 4%.
- Proposed a lightweight CNN in **PyTorch** and **OpenCV** to predict lens distortion parameters for removal.
- 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.

## Project Experience

**3D Horror Game: Asylum 7**
- Led a team of 5 developers to build a horror, role-playing, escape game with 6 levels using **Unity** .
- Planned and executed the project roadmap on **Jira**, and managed the development repo with **Git**.
- 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).

**Instagram Website Simulator**
- An Instagram clone implemented with client-side dynamic pages using **React**, **Flask** app and **SQLite** database.
- Built the main part of REST API and React components, which allows users to simulate real Instagram features such as login, post, comment, like and follow.
- Improved the complexity of maintenance by deploying the website using Amazon Web Services (**AWS**).

**Full Stack Website: Online Story Cards**
- Built a full stack website with responsive home and search function with **MongoDB, Node.js, and React** .
- Implemented login system to allow CRUD operations and deployed on Heroku and Netlify.

**Operating System**
- Implemented Linux thread library including thread, mutex, cv in **C++.** Tested it by writing multi-thread programs.
- Designed a pager to manage application processes' virtual address spaces using copy-on-write and LRU cache.
- Built a secure client-server file server by socket programming. Ensured consistency via designed order of disk writes.

**Computer Network**
- Implemented a video content distribution network(CDN) with adaptive bitrate selection and DNS load balancing.
- Built a reliable transport protocol on top of UDP, providing inorder delivery in the presence of packet loss.
- Built a router configured with a static routing table, which can forward IP and handle ARP packages.

## Skills

**Programming**: C/C++, C#, Python, Java, JavaScript, Matlab, HTML, CSS, React.js, Node.js, Flask, MySQL, MongoDB
**Tools and Frameworks**: Git, LaTeX, CUDA, OpenMP, MPI, Pytorch, OpenCV, Scikit-learn, Unity3D, Linux, Django, AWS