

Zhongqian Duan

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Education

University of Michigan

M.S.E. in Computer Science

Ann Arbor, MI

Dec. 2023 (Expected)

- *Relevant Coursework:* Web Systems, Computer Networks, Parallel Computing, Natural Language Processing

University of Michigan

B.S.E. in Computer Science (GPA: 3.9 / 4.0)

Ann Arbor, MI

May. 2022

- *Relevant Coursework:* Operating Systems, Database Systems, Data Structures & Algorithms, Machine Learning, Computer Vision, Computer Game Development, Computer Security, Parallel Programming with GPUs

Shanghai Jiao Tong University

B.S.E. in Electrical and Computer Engineering (GPA: 3.7 / 4.0)

Shanghai, China

Aug. 2022

Internship Experience

Apple Inc.

Machine Learning Engineer intern

Beijing, China

May. 2023 – Sep. 2023


- Developed a distributed training process using gRPC, featuring a remote validator and data server.
- Constructed a robust pipeline to create real-time physical simulation datasets, and implemented a dedicated training monitor for self-learning and reinforcement.

Rec Room

Software Engineer Intern

Seattle, WA

Jan. 2023 – Apr. 2023


- Developed over 20 chips using **C#** and **Git** version control for Rec Room's CircuitV2 System , including Synced Delay Chip and Player Gaze Chip.
- Created a tool prefab named "Motion Trail," which utilized **Protobuf** for Serialization and **Photon** Unity Networking (PUN) for Synchronization. The purpose of this tool was to enhance the visual appeal of moving objects.
- Deploy builds on Steam using **Jenkins**, and collaborated with a team of developers and designers to playtest new features in both screen and VR mode.

FantasyAR

Software Engineer Intern

Shanghai, China

May. 2022 – Aug. 2022

- Collaborated with a team of 4 developers to publish a full stack **AR** fighting game using **Unity** .
- Integrated *InteractionSDK* for hand tracking and input, the Natural Language Processing model *Recognissimo* for voice-control and *GoMap* for real-time AR location minimap.

NIO

Machine Learning Engineer Intern

Shanghai, China

May. 2021 – Aug. 2021

- Improved the 3D object tracking network for autonomous vehicles with **Python**, resulting in a 4% increase in precision.
- Applied pre-trained vision models, such as MaskRCNN, with different backbones to detect vehicles and lane lines, testing on over 2000 on-screen videos for autonomous driving systems.

Project Experience

Instagram Website Simulator

- Developed an Instagram clone with client-side dynamic pages using **React**, **Flask** app and **SQLite** database.
- Implemented real Instagram features, including login, post, comment, like, and follow, using **REST API**.

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.

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.

Skills

Programming: C/C++, C#, Python, Java, JavaScript, Matlab, HTML, CSS, React.js, Node.js, Flask, MySQL, MongoDB

Tools and Frameworks: Git, ~~TeX~~TeX, CUDA, OpenMP, MPI, Pytorch, OpenCV, Scikit-learn, Unity3D, Linux, Django, AWS

Honors and Additional Experience

Honors: James B. Angell Scholar, 4 Term University Honors and Dean's List, Undergraduate Excellent Scholarship of SJTU

Teaching Assistant: EECS 587 Parallel Computing & EECS445 Machine Learning, *University of Michigan*

Research Assistant: Full High Definition Demoiréing , *Shanghai Jiao Tong University*