Zhongqian Duan

✉ henry.duan0519@gmail.com | 🌐 zlzq-duanzq.github.io | ○ Github | in Linkedin | 📞 734-546-0202

Education

University of Michigan   Ann Arbor, MI
M.S.E. in Computer Science (GPA: 4.0 / 4.0)   Dec. 2023 (Expected)
- *Relevant 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)   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   Shanghai, China
B.S.E. in Electrical and Computer Engineering (GPA: 3.7 / 4.0)   Aug. 2022

Internship Experience

Apple
Incoming Machine Learning Engineer intern   -NoValue-

Rec Room   Seattle, WA
Software Engineer Intern   Jan. 2023 – Apr. 2023
- Worked on the **UGC > Logic** team for the leading virtual reality gaming startup, Rec Room 🔗.
- Developed a spawnable tool prefab "Motion Trail" with the CircuitV2 System to enhance the appearance of moving objects by creating a Trail visual effect in **C#** and using version control with **Git**.

NIO   Shanghai, China
Machine Learning Engineer Intern   May. 2021 – Aug. 2021
- Improved the 3D object tracking network for autonomous vehicles with **Python**, resulting in a 4% increase in precision.
- Proposed a lightweight CNN to predict lens distortion parameters in **OpenCV** for removal.
- 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.

Database Management System
- Designed **Oracle SQL** database utilizing relational model to store information for fictional social media platform Fakebook, and generated external views to visualize data, laying foundation for centralizing data administration 🔗.

Text-Image Pair Generation via Pre-trained Vision-Language Models   ○ NLP project
- Utilized **chatGPT** and **Midjourney** to generate the first AI Dataset with 100 text-image pairs for Image Caption △.
- Finetuned some popular state-of-the-art vision language models, such as *mPLUG* and *OFA* to the generated Dataset in **Python**, increasing the value of CIDEr from 133.4 to 135.1.

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

Honors and Additional Experience

Honors: James B. Angell Scholar, 4 Term University Honors and Dean's List, Undergraduate Excellent Scholarship of SJTU
Full Stack Development: AR game with integrated NLP model and localization API ○, *Shanghai Jiao Tong University*
Teaching Assistant: EECS445, Machine Learning, *University of Michigan*
Research Assistant: Full High Definition Demoiréing ○, *Shanghai Jiao Tong University*