Wenqing Lan

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Education

M.S. in Computer Science **Dec. 2022 (Expected)**
B.S. in Computer Science (Data Science Option) **Sept. 2017 - Mar. 2021**
University of Washington Seattle, WA
GPA: 3.85/4.00
Honor: *UW Annual Dean's List*

Technical Skills

- Java, C/C++, Python, JavaScript, WebGL, GLSL, C#
- SQLite, NoSQL, Azure, PyTorch, JUnit, Visual Studio, Vim, VS Code, Google Colab, Linux, Git

Work Experience

Research Assistant | UW Paul G. Allen School of CSE **June 2020 - March 2021**

AutoSaw | Digital Fabrication at UW

- Developed a trajectory planning tool for a home environment robotic jigsaw to cut a library of nested shapes.
- Integrated visualizations using Python in all shape transformation stages to assist the debugging and validation processes.
- Developed algorithms in C++ using glm types and bit arrays to reduce space complexity and to efficiently annotate protected areas around a shape's boundary.
- Paper *"Robotic Jigsaw: A Non-Holonomic Cutting Robot and Path Planning Algorithm"* accepted to IROS2021.

Accessible Knitting | Make4All

- Web-scraped 10000+ knitting patterns and projects using Python and Ravelry API.
- Cleaned and categorized knitting data into SQLite databases to facilitate the team's research process.

Teaching Assistant | UW Paul G. Allen School of CSE **March 2020 - June 2021**

- Served as TA of Computer Security (CSE484) and Computer Graphics (CSE457).
- Set up and maintained C projects on Linux servers and lead project grading for classes of 150 more students.
- Automated set-up steps and grading processes by writing scripts in Shell and Python.
- Held weekly quiz sections and office hours for 20 more students.

Software Engineering Intern | Shenzhen Xinjunte Intelligent Medical Devices Co., China **Summer 2017**

- Designed and created a customer-oriented mobile application in JavaScript for medical device control.
- Set up and implemented the complete pipeline for users to connect the device through Bluetooth, record device usage activities, track usage history, and pay through third-party APIs.
- Tested with the hardware team to ensure interactive functionalities.

Projects

Proficiency in Java

- **MiniJava Compiler**: a compiler for *MiniJava* with lexical analysis, syntax analysis, semantic analysis, and assembly code generation.
- **SimpleDB**: a database that supports synchronized join, delete, aggregation operations with log-based rollback and crash recovery.
- **Flight Service System**: an ACID-guaranteed transactional flight service system with features including sign-up, log-in, flights searching, reservation, booking, payments, and cancellation.

Proficiency in C/C++

- **File Crawler**: created a file system search tool that creates on-disk indices and queries search results using a POSIX multithreaded Web server.
- **Experimental Kernel**: extended the xk Operating System kernel with multiprocessing, dynamic memory allocation, and a crash-safe file management system.
- **Image Processor**: implemented various filters, real-time video optical flow, and panorama stitching based on corner detection and matching.
- **Animator**: created an animation tool in Qt Creator with modeling, ray-tracing, spline-based motion curve interpolations, and particle movement systems.

Experience in Python

- **Machine Learning**: implemented techniques including gradient descent, linear and logistic regression, k-means clustering, and principal component analysis.
- **Birdify**: created a bird classifier using Transfer Learning technique on Efficient Net that reached 91% test accuracy.

Experience in JavaScript, WebGL, GLSL

- **VR Headset**: built up a fully functional head-mounted display with distortion-corrected stereoscopic rendering and Six degrees of freedom (6DoF) tracking using IMU and Marker tracking.