Raymond Lawrence

SOFTWARE ENGINEER

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Education

University of Louisville   *Louisville, KY*
BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING   *Expected August 2023*

Skills

Programming	**C/C++**, GLSL, Python, C#
Graphics	Unreal Engine, Unity Engine, OpenGL, OpenXR
Tools	Git, Visual Studio, GDB
Other	Linux, Linear Algebra, Vector Calculus, Technical Writing

Applied Experience

Manufacturing Digital Twin

PUBLICATION: HTTPS://IISE.CONFEX.COM/IISE/2023/MEETINGAPP.CGI/PAPER/2685

- VR-based digital twin of a manufacturing system consisting of 3D printers and UR3 robots
- Model built in **Unreal Engine 4** with custom components written in **C++**
- Architected custom data-collection infrastructure using Arduino microcontrollers and Raspberry Pi processors
- Communicated data over a LAN via hand-written UDP and TCP components, as well as a pre-existing REST API

Trager Microforest at Founder's Square

REPOSITORY: HTTPS://GITHUB.COM/RLWRNC/MICROFOREST

- VR-based interactive model of a design of a local park
- Built in the **Unity Engine** with custom components written in **C#**
- Integrated **OpenXR**-based VIVE eye tracking to gague user interest on various park elements
- Interdisciplinary project with the UofL Urban Design Studio

The POSIX Projects

REPOSITORY: HTTPS://GITHUB.COM/RLWRNC/THE-POSIX-PROJECTS

- A variety of command-line utility applications written for a course in Operating Systems
- Written in **C** using standard POSIX libraries
- Includes a multi-threaded directory tracer, a client-server search application, and a ex2 partition analyzer

T3DRIS

REPOSITORY: HTTPS://GITHUB.COM/RLWRNC/T3DRIS

- A Tetris clone played on a 3D grid
- Written in **C** using **OpenGL** and minimal external dependencies
- Ongoing project written in spare time

Work Experience

Aqlan Lab @ UofL   *Louisville, KY*
UNDERGRADUATE RESEARCH ASSISTANT   *January 2021 - PRESENT*

- Architected a VR-based interactive model of a downtown Louisville park.
- Built a digital twin of a simple part assembly system in **Unreal Engine**.
- Helped develop virtual reality systems in the **Unity** game engine, including a multi-player collaborative factory.

U.S. Army Human Resources Command   *Ft. Knox, KY*
COMPUTER ENGINEERING TRAINEE   *Jan. - May. 2021, Aug. - Dec. 2021*

- Constructed data visualization dashboards using the Oracle Business Intelligence software suite.
- Participated in weekly team meetings to discuss and set project goals.

Engineering Fundamentals Department @ UofL *Louisville, KY*

Undergraduate Research Assistant *May - Jul. 2021*

- Wrangled data related to student performance using the NumPy and Pandas **Python** libraries.

Activites + Honors

Executive Vice President, Triangle Fraternity

- Regularly communicated with sub-officers to ensure they met their goals.
- Helped organize weekly chapter meetings.

Eagle Scout

- Lead construction and installation of a community food pantry at a local church.
- Staffed two National Youth Leadership Training (NYLT) events.