Website: https://lewibs.com
Github: https://github.com/lewibs

# Benjamin Lewis

Phone: +1(919) 909-8267
Citizenship: American, Irish

Email: benjaminsl2000@gmail.com
Linkedin: https://linkedin.com/in/lewibs

## Work Experience

**Software Engineer** **SMART Technologies** **Aug 2024 - Present**

- Recipient of the True North Award, recognizing exceptional contributions.
- Championed start to end development and managerial buy-in of multiple user facing features.
- Implemented a feature called “link anything” which allowed users to add to everything easily.
- Invented and led R&D for methods to detect and help struggling users.
- Integrated multiple AI features such as image background removal, LLM integrations, image sharpening, image retheming.
- Implemented right to left text support, unlocking a sales market which accounts for 10% of the global population.
- Worked on data design with the company quantitative analyst to help alleviate their workload.
- Integrated rotational math in the graphics engine to support rotated text.

**Founder/Fullstack Software Engineer** **Envision Reality** **May 2023 - Aug 2024**

- Envision Reality is a 3D user facing AI-assisted photorealistic interior design web-application.
- Created a 3D visualization engine that utilizes recent Gaussian Splatting research for AR/VR.
- Designed Lambda workers for integrations of long running third party APIs.
- Wrote WASM C scripts to implement faster graph traversal algorithms in the front end.
- Invented deep learning point cloud gaussian segmentation algorithms.

**Front End Software Engineer** **PowerN** **Dec 2021 - Dec 2023**

- Architect for CPMS, a three.js based 4D computer vision engine for nuclear power plants.
- Converted wireframe designs into scalable well documented code and clean architecture.
- Designed scalable Django Python backend APIs and optimized front-end data flows.
- Implemented microservice for point-based compatibility checks for prefabricated components.
- Led an collaborative agile team of international developers and cross discipline engineers.

## Technical Skills

- Languages: Javascript, TypeScript, Java, Python, C, C++, MATLAB, HTML/CSS
- Frameworks: Pytorch, Three.js, Nest.js, Next.js, React, ReactNative, Potree, ifc.js, Flask
- Tools: Linux, Docker, AWS, JWT, Mongo, Jest, WebAssembly (WASM), AWS-CDK, LIDAR, SQL

## Education

**North Carolina State University** **Raleigh, North Carolina**
Bachelor's Degree Computer Science GPA 3.5

## Open Source Contributions

**Threejs** - DragControls, added rotate mode - https://github.com/mrdoob/three.js/pull/27689
**IFCjs** - Raycaster improvements - https://github.com/ThatOpen/engine_components
**Lumaapi** - Updated to work with aws lambda https://github.com/envisionreality/lumaapi-python

## Awards

**True North Award** **SMART Technologies, Nov 2024**
Awarded to those who exemplify SMART's mission. My team and I received this for implementing right-to-left text support, unlocking a market representing 10% of the world's population.

**Computer Science Honors** **North Carolina State University, May 2023**
Graduated with a minimum GPA of 3.5 while completing a challenging program of computer science undergraduate study, including an honors thesis with a supervising professor. Worked with Dr. Lina Battestilli to write a web application for enhancing security in child care.

**1st place MATLAB Cody Competition** **MATHWORKS NCSU, Sep 2021**
Placed first place in the MATLAB Cody competition at North Carolina State University.

**Dean's List** **North Carolina State University, Dec 2023**
Maintained 3.5 or better on 12 to 14 credit hours of coursework.

## Projects

**Ottery** https://github.com/ottery-app
- Childcare security system which awarded me the Computer science honors award.
- Designed and created a system for safely picking up and dropping off kids at daycares.
- Used by a local church to manage over 400 children.

**Tech Stack:** Nestjs, Javascript, React, Jest, Figma, Mongoose, MongoDB

**Keyfile** https://github.com/lewibs/keyfile
- Created a DSL to simplify keyboard firmware with intuitive syntax for layers, macros, and colors.
- Developed transpiler to convert Keyfile syntax into C++ for QMK firmware.
- Is designed to allow direct compilation into binary firmware.

**Tech Stack:** C++, Linux, Docker, QMK

**DuckTyper** https://www.npmjs.com/package/ducktyper
- Ducktyper is a runtime DTO validation tool to help with complexity involved with Forms and APIs.
- Created so that developers can create templates, then use those to validate input automatically.
- Heavily tested in Jest to allow for strong confidence in type checking correctness.

**Tech Stack:** Typescript, Jest, Node, npm

**Guarded Components** https://www.npmjs.com/package/guarded-components
- Integrates with any JSX-compatible framework for dynamic authorization.
- Allows customizable contracts with conditions, state retrieval, and failure actions.
- Built with JavaScript and validated using Jest for production-ready stability.

**Tech Stack:** Javascript, React

**6 Card Golf** https://github.com/lewibs/6_card_golf_ai
- Designed an AI agent to play 6 Card Golf, focusing on achieving the lowest game score.
- Taught models though, Q-learning, improving strategic gameplay with iterative learning.
- Decisions use statistical card values and pairing probabilities to minimize game score.

**Tech Stack:** Python, Pytorch