

# Jonathan Bogie

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**Portfolio:** <https://jonathanbogie.me> **GitHub:** <https://github.com/rukadev> **LinkedIn:** <https://linkedin.com/in/jonathanbogie>

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## Education

**Bachelor of Science in Computer Science**, University of Oregon, OR, USA

MGPA 3.75 | 2020 - Present

**Minor in Mathematics**

## Relevant Coursework

Data Structures and Algorithms, Linear Algebra, Discrete Mathematics, Computer Organization, Web Development, Data Science I, Data Science II, Software Engineering, Intermed Algorithms, C/C++ and Unix

## Skills

- Programming Languages: C++, C, Python, Lua, Java, JavaScript, PHP
- Platform/OS: Unix, Windows
- Revision Control: Git, Subversion
- Frameworks & Applications: Apache, React, Angular, Django, Pandas, Numpy

## Projects

- **Cyclone Culling:** Designed and implemented a culling system to dynamically render objects in 3D space according to proximity. The logic is split into a broad search, which utilizes octree spatial partitioning to instantiate objects, and a narrow search, which defines level of detail. Includes documentation.
- **Elixir2D Framework:** An open source framework for HTML5 powered web games. Provides technical features such as handling input, collisions, sprites, and rendering, as well as offering common gameplay mechanics at your disposal.
- **Scaler Building System:** Built a system that uses user-input to construct, edit, color, and texture user-generated structures. Touches on computational geometric and algebraic concepts such as triangulation, straight skeletons, vectors, and matrices.
- **DejaVu Map Editor:** A modular, template-based approach to designing large scale static maps that closely follows the flyweight design pattern to reduce memory. Includes documentation.
- **Game Inspired Portfolio Site:** Updated and fused an existing website with Elixir2D to create a portfolio website that features level-based mini games to unlock sections of site content.
- **Virtual Computer Architecture Model:** Modeled a basic computer inspired by the ARM instruction set architecture, featuring a CPU, general purpose and specialized registers, codes for operations, and a fetch/decode/execution cycle.
- **Polygon Triangulation:** Built an algorithm to partition a polygonal area into a set of triangles by the “ear-clipping” method, with includes support for convex and concave polygons.
- **Lossless Data Compression:** Constructed an algorithm to compress JSON encoded packets using LZW compression to effectively detect and store common present and past string occurrences.
- **Compartmental Modeling:** Designed a model to simulate the transition of individuals within a population from states that range from susceptibility, infection, and recovery.

## Experience

- **Google Developer Student Club** October 2022 - Present  
Collaborated with students to gain technical skills through hands-on workshops using various Google API.
- **Game Development Club** November 2021 - Present  
Worked together and individually to create, publish, and learn about video games with peers.

