

# Adam Burke

Full-Stack Software Engineer | Chicago & NYC

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## EDUCATION

Northeastern University, *Khoury College of Computer Sciences*

Boston, MA

Bachelor of Science in Computer Science and Mathematics

2019 - 2023

**GPA:** 3.6/4.0

**Honors and Awards:** Cum Laude, Dean's List, Arkava, Coen, Dean's, and Kovler Scholarships

**Relevant Coursework:** Software Engineering, Algorithms and Data, Object-Oriented Design, Cryptography, Number Theory, Chaos and Dynamics, Cybersecurity, Combinatorics, Automata and Computability Theory

## TECHNICAL SKILLS

**Languages:** Typescript/Javascript, Python, C/C++/C#, Java, SQL, Rust, HTML/CSS, PHP, R, Racket, LISP, Haskell

**Frameworks:** Node, React, Jest, Fast-Check, Express, Flask, Django, .NET Core, JUnit, Swing, SDL2, OpenGL

**Dev Tools:** Linux, PostgreSQL, MongoDB, Git, Jira, Docker, VirtualBox, AWS, Google Cloud Platform, Vim, VS Code

## EXPERIENCE

**Blockchain Research Engineer**

07/22 – 12/22

*Genesis Global Trading | Typescript (Node), Python, PostgreSQL, GCP, Jest*

*Hybrid (New York, NY)*

- Developed a secure transaction processor for over 20 cryptocurrencies, including BTC, ETH, LTC, and ATOM
- Implemented the BLS encryption and signature aggregation scheme into custody wallet solutions, reducing stored key sizes by a factor of at least 1/4 (bits) and allowing for efficient and scalable threshold signature verification
- Led the design of an indexing application used to monitor the ETC Blockchain and log changes in PostgreSQL, with deployment in a variety of environments using Google Cloud Platform
- Integrated property-based tests using Fast-Check to verify security and expected behavior in arbitrary test cases

**Software Engineering Co-op**

07/21 - 12/21

*Doble Engineering Company | .NET Core, C/C++/C#, Google Flatbuffers, XML*

*Marlborough, MA*

- Extracted and tested an XML-based data persistence mechanism from monolithic legacy code, verifying behavior and data integrity with 100% unit test coverage
- Wrote a C# driver library using Google Flatbuffers and T4 Text Templates to serialize/deserialize over 180 digital frequencies for proprietary power-monitoring equipment across a client written in C
- Worked closely with hardware/embedded systems engineers to adapt software to changing technical requirements

## PROJECTS (HEADINGS CLICKABLE)

**GLIFS - OpenGL Fractal Renderer** | C++, SDL2, OpenGL, Discrete Dynamics

12/23 - 12/23

- Used the chaos game algorithm from discrete dynamics to draw the invariant set of arbitrary iterated function systems in a 3D projection, giving the user control over iteration to draw fractals such as the Sierpiński triangle
- Implemented a low-level graphics pipeline in C++ using OpenGL and SDL2 to handle user interaction

**Covey.Town DJ Room** | Node, React, CSS, NoEmbed API, Youtube API, Render

10/23 - 12/23

- Designed and implemented a new feature in the open-source Covey.Town meeting platform, allowing users to enter a designated map area and watch videos together, with heightened privileges and controls for a 'DJ' room admin
- Worked in an agile team of 4, was responsible for the entire frontend written in React with CSS, CI/CD and deployment using Render and Github actions, most backend development using Node, and sprint planning

**FunStructs** | Java, Lambda Calculus, JUnit

09/21 - Present

- Lightweight functional library written entirely in Java, with generic data types that takes advantage of OOP design patterns and lambda calculus to define common operations over abstract lists, trees, matrices, and graphs
- Enables quicker development, allowing users to call LISP-like functions and sorts on robust data types

## INTERESTS AND SPECIALIZED KNOWLEDGE

**Technical:** Cryptography (Blowfish, RSA, DES/AES, BLS), Linguistics, Complexity Theory, Mathematical Logic

**Non-Technical:** Cooking, Music Production, Biking, Environmental Conservation, Education, Crochet