

# Elijah Widener Ferreira

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## EDUCATION

Virginia Polytechnic Institute and State University

GPA 3.69 May 2025

B.S in Applied Discrete Mathematics, Minor in Computer Science

Relevant Coursework: Competitive Programming, Data Structures and Algorithms, Advanced Linear

Algebra, Theoretical Statistics, Entrepreneurship in CS

## PROFESSIONAL EXPERIENCE

Technomics; Associate

Jul 2025 - Present

- Automated large portions of CSDR validation process with **R and Python**, including file path generation, metadata population, and validation checks, **optimizing performance by over 50%**
- Owned **25% of team-wide validation workload** on a 10-person team; **double the next highest contributor and triple the average**, establishing a **reputation for reliability and efficiency**
- Led development of an **AI-powered validation engine** using **Ollama**, enabling automated checks with an extendable architecture designed for future validation use cases beyond the project
- Actively drove company culture** through AI/ML initiative, public speaking workshops, and community volunteering

Henry Jackson Foundation; Software Engineer Intern

Aug 2024 – May 2025

- Developed **LSTM architecture** for predicting mental health diagnosis codes occurring after TBI encounters
- Consulted with research teams and IT departments to define data requirements and create accessible data structures for relevant stakeholders
- Developed **SQL queries and automated tasks** using advanced Excel and MS SQL, improving data management efficiency.

## PERSONAL PROJECTS

Point Game Serverless Web Application

Dec 2025 - Present

- Designed and implemented a **real-time, multiplayer card game backend** using a **serverless, event-driven architecture** on AWS (Lambda, API Gateway, DynamoDB, Cognito).
- Built an **authoritative game engine** with strict state validation, action logging, replayable hand reconstruction, and deterministic resync support.
- Implemented **low-latency WebSocket broadcasting** with per-player privacy filtering and incremental state updates for smooth gameplay.
- Engineered **fault-tolerant turn timers** using EventBridge scheduling and sequence guards to safely handle disconnects and stale events.
- Modeled and owned the full system design end-to-end, emphasizing scalability, correctness, and interview-ready architectural clarity.

ELO Rating Web App For Volleyball;

Dec 2024

- Built a scalable Firestore-backed data layer for **persistent players, groups, and match history**, powering **real-time leaderboards** and a **match-approval** system for fair competitive play.
- Delivered a **polished, responsive UI** with dynamic tab navigation and **secure authentication** backed by hashed-password Firestore user accounts.

MoonPoker Web App; Developer

Sep 2023 – May 2025

- Designed and implemented a robust **finite state machine** to handle backend game logic for 20+ poker variants, supporting unique betting styles and multiple hand evaluation algorithms
- Engineered bidirectional **gRPC-based client-server architecture** with **real-time state synchronization** supporting many
- Developed **RESTful user service** with secure authentication, authorization, and profile management using JWT tokens and role-based permissions
- Designed and integrated a **clean frontend using Flutter**, maintaining privacy and security for all clients

## SKILLS

Languages: C/C++, Python, Java, TypeScript, JavaScript, R

Frameworks and Libraries: CMake, Google Test, Flutter, Tensorflow, NumPy, Pandas, React, MongoDB

Technologies: Git, AWS, REST APIs, Linux, Windows, MS Office

## ACCOMPLISHMENTS

Eagle Scout

Jun 2018

UT Austin Poker Club Founder/President

Sep 2023

TS Clearance (Interim)

Sep 2025