

Hamza ElMokhtar Shili

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EDUCATION

Rice University, *Houston, TX*

M.S. Computer Science with Thesis

Aug 2025 – May 2026

Awards: Department of Computer Science Full-Ride Graduate Research Fellowship

B.S. Computer Science & B.A. Economics; Minors in Data Science and Financial Modeling

May 2025

Relevant Courses: Machine Learning, Concurrent Programming, Database Systems, GPA: 3.80/4.00
Optimization, Probability and Statistics, Linear Algebra, Operating Systems, Market Models, Financial Accounting

SKILLS

Programming: Python (Expert), Java & C & Go (Proficient), C++, TypeScript, HTML, CSS, JavaScript, Node.js

Tools: Linux/Unix, Docker & K8s, Git, REST APIs, Terraform, Vault, Shell Scripting, AWS (basic), Firebase

DB & Frameworks: PostgreSQL, MongoDB, PyTorch, NumPy, Pandas, Scikit-learn, Tensorflow, Matplotlib

WORK EXPERIENCE

Hashicorp, *San Francisco, CA*

May 2024 – Present

Software Engineering Intern - R&D Department

- Develop a **Terraform** plugin for Vault Secret Operator (VSO), streamlining **Kubernetes** (K8s) secret management, reducing manual configuration time by 40%, and enhancing operational efficiency.
- Extend VSO Custom Resource Definitions (CRDs) to include Vault tokens, improving token management security and efficiency by 30% across multiple K8s clusters.
- Collaborated with engineers and PMs to resolve system panics, reducing incidents by 50% in HCP **Vault** and enhancing stability in the Vault Terraform provider and VSO.

OptimaLab, *Rice University, Houston, TX*

Oct 2023 – Present

Research Assistant

- Design and implement a benchmarking algorithm for a distributed deep learning model, reducing GPU training time by 20% and improving model accuracy by 15% using **Python** and **NVIDIA CUDA**.
- Improve gating function in FedJETs (just-in-time personalization framework in Federated Learning), increasing model efficiency by 25% and expanding testing to **NLP** and **computer vision** tasks.
- Synthesized results with PI for thesis report, "Efficient Hierarchical Subnetwork Training of Transformers."

PROJECT EXPERIENCE

Investment Strategy Optimization (Python, Yahoo Finance API, Scikit-learn, Tensorflow) Feb 2024 – Apr 2024

- Engineered financial features (Momentum EMA Divergence, RSI, VWAP) to capture market trends and developed a **Deep Q-Network** (DQN) algorithm for optimizing investment strategies.
- Outperformed S&P 500, accurately predicting trends in cloud engineering and AI, averaging 11% returns.

Owl M3ssag1ng Application (Go, HTML, CSS, TypeScript (TS), REST APIs)

Sept 2023 – Dec 2023

- Built app's NoSQL db in **Go**, upping efficiency by 30% with **REST APIs** & concurrency techniques.
- Optimized performance by 20% with concurrency management, leveraging **TS's** asynchronous capabilities.

FEAT - Feedback & Evaluation via Automated Tests (Java, JUnit)

Aug 2022 – Dec 2022

- Constructed data-driven automated tool using **Java** and **JUnit** to generate test cases for Python programs and offer evaluative and formative assessments, improving student debugging efficiency by 70%.
- Reduced the workload of instructors by 30%, freeing up time for personalized feedback and teaching.

LEADERSHIP EXPERIENCE

Oshman Engineering Design Kitchen, *Rice University, Houston, TX*

Electronics & Computer Lab Lead

Aug 2022 – Jan 2023

- Created Embedded Systems workshop, enhancing electronics proficiency for 150+ participants.
- Navigated semiconductor shortage, designing a database to manage 50+ processors and 100+ electronics.
- Collaborated with fellow leads to recruit and mentor 10+ new lab assistants.

Other: TA for COMP 382 and COMP 321, President of Rice MENA Student Association, Head of Marketing at Rice Blockchain Club, International Orientation Advisor, IT Assistant at Rice Office of Information Technology

Interests: Cooking, Hiking, Rowing, Day Trading, Creative Writing, Gardening, Golf, Interior Decorating, Chess