

Ryu Hemingway

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PROFILE

MSCS Align graduate student at Northeastern University building AI/ML systems and software engineering expertise, with a prior background in clinical medicine and behavioral research that brings rigor, structured analytical reasoning, and high-stakes documentation experience to technical work.

EDUCATION

Northeastern University - Silicon Valley, CA

September 2025 – Expected April 2028

Master of Science in Computer Science (Align Program)

- Coursework: Fundamentals of Computer Science (CS 5001), Discrete Structures (CS 5002), Object-Oriented Design (CS 5004), Data Structures and Algorithms (CS 5008), Algorithms (CS 5800), Foundations of Artificial Intelligence (CS 5100)

St. George's University School of Medicine - Grenada

September 2023 – June 2024

Completed first year of Doctor of Medicine program before pivoting to Computer Science

The Ohio State University - Columbus, OH

August 2017 – May 2021

Bachelor of Arts in Psychology

- Dean's List, Fall 2020

TECHNICAL SKILLS

Programming Languages: Python, Swift, JavaScript, SQL, C, HTML/CSS

Frameworks & Tools: SwiftUI, AppKit, React, SQLite (FTS5), AWS (Lambda, DynamoDB), Stripe, Sparkle, Homebrew, Git/GitHub, pytest, Swift Testing, EMR Systems

Concepts: LLM tool-calling harnesses, retrieval-augmented generation (RAG), local model inference (LM Studio, Ollama), model routing, prompt-injection boundaries, object-oriented programming, data structures and algorithms

HONORS & CERTIFICATIONS

- Certified Medical Scribe - ScribeAmerica, Spring 2021
- Dean's List - The Ohio State University, Fall 2020

PROJECTS

Ghost - Native macOS AI Assistant

2026

- Built and shipped a native macOS menu-bar AI assistant in Swift and SwiftUI (76,000+ lines across 179 source files), routing prompts to local LM Studio and Ollama models or to hosted Claude, Gemini, and DeepSeek APIs from a single interface
- Designed a capability harness of 76 app-owned tools (file and document generation, format conversion, Calendar and Reminders, OCR, shell) that verifies permissions and path boundaries, executes the action, and returns the real result instead of trusting the model's claim - the same verification pipeline and permission gates serve local and cloud models alike
- Implemented a local retrieval-augmented generation pipeline on SQLite FTS5 with on-device semantic recall, indexing 30 document and source-code formats and returning cited, source-backed answers
- Enforced a privacy invariant that keeps Messages, Notes, and Mail content on-device and out of every cloud provider request, and wrote 1,094 unit tests (all passing in CI) covering routing, tool execution, and egress policy
- Distributed the app as a signed, notarized release with Sparkle auto-updates, an AWS Lambda and DynamoDB licensing service, and a CloudFront and S3 landing page
- Shipped to 20+ paying users whose feedback has driven released fixes, and publish CI-regenerated project metrics - line coverage of 24.6% overall and 43.5% across non-UI logic - via live badges and a generated METRICS.md

Huffman Coding - Lossless Data Compression Research

2026

- Wrote a research paper analyzing Huffman coding end to end: the exchange-argument optimality proof, a from-scratch Python implementation with 22 unit tests, and seeded experiments measuring encoding at 0.158 μ s and decoding at 0.463 μ s per character, the flat per-character cost the $\Theta(m)$ analysis predicts

- Quantified two failure modes: inputs below roughly 1,000 characters grow because the serialized tree costs more than compression saves, and the one-bit codeword floor makes a nine-to-one distribution compress to the same 1,267 bytes as an even split

ClaudeMaxing - Terminal Usage Dashboard (open source, MIT)

2026

- Built and open-sourced a Python CLI that parses local Claude Code session transcripts and reports per-day tokens, equivalent API cost, model mix, and period-over-period efficiency, using an incremental byte-offset cache so repeat runs read only new data
- Distributed through a personal Homebrew tap with a one-command install script, and screened community leaderboard submissions server-side

Programming Fundamentals and AI - Terminal Curriculum

2026

- Built an offline-first terminal learning app covering C, Python, Java, and AI engineering across 244 lessons, grading by compiling and running submitted code (`gcc -Wall -Wextra`, `javac`) and returning the real compiler error and an output diff rather than pattern-matching source text

Personal Portfolio Website

2025

- Built and deployed a static portfolio site on GitHub Pages in hand-written HTML and CSS, with no framework, build step, or JavaScript
- Kept every claim on the page traceable: each figure maps to a documented command that re-derives it from the source repository

RELEVANT EXPERIENCE

UCSF Benioff Children's Hospital Oakland - Oakland, CA

August 2021 – May 2022

Medical Scribe, Pediatric Orthopedics

- Documented 800+ hours of complex diagnostic data across concurrent patient cases, maintaining accuracy under time pressure in a high-volume Electronic Medical Records system
- Reduced transcription errors by developing and refining documentation protocols adopted across the scribe team
- Trained 3 incoming scribes on specialty-specific workflows and process optimization, accelerating ramp-up time

LEADERSHIP & VOLUNTEER EXPERIENCE

American Red Cross - Disaster Action Team, Columbus, OH

Aug 2019 – Feb 2022

Disaster Relief Volunteer

- Coordinated emergency response logistics across multiple deployments, managing rapid crisis assessment
- Built case tracking systems for victim resource allocation, improving data accessibility for field teams

Operation Smile - Bangkok, Thailand

Feb 2015 – Apr 2015

Event Organizer

- Led cross-functional fundraising and data-driven outreach, raising \$30,000+ for cleft palate surgeries and driving event attendance to 5,000+ participants