Gregory Thomas Croisdale

Founding Engineer, Khaki
https://g.regory.dev

SKILLS

Languages: TypeScript, React, Capacitor, Rust, Python, C/C++, OCaml
Expertise: Full-Stack Application Design, Implementation, and Evaluation

ACADEMIC BACKGROUND

PhD Candidate in Computer Science Aug 2022 – Aug 2025
University of Michigan
M.S. earned in May 2024

B.S. Computer Science Aug 2018 – May 2022
Mathematics and Philosophy Minors
University of Tennessee, Knoxville

EXPERIENCE

Founding Engineer Aug 2025 – Present
Khaki (TechStars Columbus Fall '25)

- Architected a TypeScript monorepo to support an AI-native email client, handling concurrent, secure sessions and **reducing full-application iteration cycles to under one week.**
- Implemented scalable Infrastructure-as-Code (IoC) using OpenTofu/Terraform and Ansible to manage production deployments.
- Engineered a custom server-side rendering pipeline to safely display potentially adversarial HTML/CSS from arbitrary email senders without compromising client security or UX.
- Created and managed the security audit to achieve CASA Tier 2 verification (Google), unlocking sensitive data scopes required for production.
- Deployed cross-platform clients (Web, iOS via Capacitor) and evaluated using user feedback and telemetry. **Reached Top 100 News App on Apple App Store.**

PhD Candidate Aug 2022 – Aug 2025
University of Michigan

- *Advisor: Dr. Cyrus Omar*
- **Hazel:** Implemented the *Livelits* runtime system in the Hazel programming language written in OCaml, bridging the interpreter state with the browser DOM to enable user-defined GUI widgets. Built a JavaScript FFI to embed Hazel into web environments via iframes with Ink and Switch's Patchwork.
- **Rubikon:** Architected and implemented an AR Rubik's Cube tutoring system using ArUCO markers in Python with a team of undergraduate researchers, **beating a video tutorial baseline.** Published in *DIS 2025*.
- **DeckFlow:** Built a multimodal generative AI infinite canvas in Python/React with novel iterative feedback mechanisms using TlDraw. Conducted an N=16 within-subjects user study to evaluate iterative prompting flows, conducted qualitative analysis from telemetry, recordings, and interviews, finding **improved outcomes in creative tasks.** Published in *VL/HCC 2025*.

Teaching Assistant Aug 2024 – May 2025
University of Michigan

- **EECS 490 (Programming Languages):** Worked with Dr. Cyrus Omar to design assignments in Hazel, OCaml, and Rust, teaching type theory and functional programming concepts.
- **Alien Anatomy: How ChatGPT Thinks:** Co-developed the curriculum and assignments for the university's inaugural "AI for Non-CS Majors" course. Wrote lectures explaining Neural Networks and Backpropagation.
- **EECS 183 (Intro to CS):** Managed a staff of 20+ graders for a 1000-student course. Oversaw grading infrastructure, exam logistics, and staff coordination. Taught a weekly lab section.

Undergraduate Research Assistant Jan 2021 – Aug 2022
University of Tennessee & Stony Brook University (PAIRS, MoSIS Lab, & TEALab)

- Trained and optimized Ancient Greek character recognition models using RNNs, ResNet, XGBoost from citizen science data. Ported the inference engine to run entirely client-side in the browser using WASM. Published in *eScience 2021*.
- Created client-only code generation application for optimized stencil computation. Published in *ISPASS 2022*.
- Developed mobile data collection apps for IoT bike seat sensor to support pose estimation on a stationary bike. Published in *IMWUT 2023*.

PUBLICATIONS

DeckFlow: Iterative Specification on a Multimodal Generative Canvas
VL/HCC. September 2025.

Rubikon: Intelligent Tutoring for Rubik's Cube Learning Through AR-enabled Physical Task Reconfiguration
DIS. July 2025.

SmarCyPad: A Smart Seat Pad for Cycling Fitness Tracking Leveraging Low-cost Conductive Fabric Sensors
IMWUT. September 2023.

FOURST: A code generator for FFT-based fast stencil computations
IEEE ISPASS 2022. May 2022.

Exploring Learning Approaches for Ancient Greek Character Recognition with Citizen Science Data
17th IEEE eScience 2021. Sept 2021.

AWARDS AND GRANTS

Best Demo Award, UMich AI Symposium 2022
Rackham Merit Fellowship, University of Michigan 2022
Excellence and Distinction in Undergraduate Research, UTK 2022
NSF REU (1950042) Grant Participant, Stony Brook University 2021
Gonzalez Family Outstanding Undergraduate Teaching Assistant, UTK 2021
SURGE Grant Recipient, UTK 2020
Undergraduate Research Travel Grant, UTK 2020

SERVICE

University Relations Chair 2024 – 2025
University of Michigan CSE Grad Student Government

Roundtable Moderator Oct 2023
University of Michigan CSE DEI Discussions

Poster Chair Oct 2023
University of Michigan AI Symposium