

## EDUCATION

**University of Washington** – 3.87 GPA, 3.96 in CS 09/22 – 06/26  
BS+MS in Computer Science, BS in Mathematics, UWSO First Violin Section, Accelerated Honors Math

## RESEARCH EXPERIENCE

**University of Washington** – Advisor: Dr. Stefan Steinerberger Sep. 2024 – Present

**Practical algorithms for graph embedding.** Graph Theory, Algorithms, Combinatorics. [Link](#).

**Goal:** Design a specialized algorithm optimized for embedding cage graphs.

- **Invented and Implemented** algorithm in C with visualization and verification in Python.
- **Co-authored** the research paper [P3] by writing 50% of the paper, 100% of the code, 80% of the figures.

**Ubiquitous Computing Lab** – Advisor: Dr. Shwetak Patel Jun. 2024 – Present

**Battery-free flight-based sensor systems for environmental monitoring and alerts.** Embedded ML.

**Goal:** Low-cost, low-power environmental monitoring to predict disasters like wildfires.

**Multi-modal automated lifecycle assessments of consumer electronics.** ML for sustainability.

**Goal:** Democratize access to environmental impact estimates and empower sustainable consumption.

- **Co-authored** study design and research paper [P4] by leading the data collection effort for 1000s of products and designing the [Computer Vision](#) pipeline, UI, model training and evaluation framework.

**ICTD Lab** – Advisor: Dr. Richard Anderson Sep. 2022 – May 2024

**Digital phone directory for subsistence farmers in rural Tanzania.** ICTD. [Link](#).

**Goal:** Study the economic impacts of digital agricultural information systems in Sub-Saharan Africa.

- **Presented** live (Para.chi DUB [T2] and CHANGE Seminar [T1]) and video talks [T3].
- **Co-first-authored** the paper [P5] accepted to ACM SIGCHI 2024.
- **Led** development of the USSD server and later also the Android App.

## PUBLICATIONS

[P5] – [Peer Reviewed and Published](#), Co-first HCI, ICTD

Ananditha Raghunath, Alexander Metzger, Hans Easton, XunMei Liu, Fanchong Wang, Yunqi Wang, Yunwei Zhao, Hosea Mpogole, and Richard Anderson. 2024. eKichabi v2: Designing and Scaling a Dual-Platform Agricultural Technology in Rural Tanzania. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11-16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 16 pages.

[P4] – [Submitted to ACM MobiSys 2025](#), Third ML, CV

Zhihan Zhang, Yuxuan Mei, Alexander Metzger, Felix Hähnlein, Zachary Englhardt, Tingyu Cheng, Shwetak Patel, Adriana Schulz, and Vikram Iyer. SAMIR: Autonomous Sustainability Assessment via Multimodal Information Retrieval.

[P3] – [Submitted to Discrete Mathematics](#), Co-first Algorithms, Graph Combinatorics

Alexander Metzger and Austin Ulrigg. An Efficient Genus Algorithm Based on Graph Rotations.

[P2] – [Submitted to Interspeech 2025](#), First Audio Models, ML, NLP, HCI

Alexander Metzger, Aruna Srivastava, Ruslan Mukhamedvaleev, and Samir Farhan. Transcribing in Context: Evaluating Biases in English Phonetic Transcription.

[P1] – [Planned for NeurIPS](#), First HCI, CV, Medical ML

Alexander Metzger and Aureole. Digitized Concussion Tests Using Computer Vision and Speech Recognition.

## TALKS

[T7] – <u>Building Inclusive Speech Technology</u> DubHacks Next Demo Day, Seattle Washington, WA	Apr. 2025
[T6] – <u>The Future of Language Learning</u> Mozilla Builders Accelerator Demo Day, San Francisco, CA	Dec. 2024
[T5] – <u>Computational Linguistics for Machine Aided Pronunciation Learning</u> University of Washington Computational Linguistics Group, Seattle, WA	Oct. 2024
[T4] – <u>Local AI and Machine Aided Pronunciation Learning</u> Mozilla Builders Accelerator Kickoff Event, New York, NY	Sep. 2024
[T3&2] – <u>eKichabi v2: Designing and Scaling a Dual Platform Technology in Rural Tanzania</u> ACM SIGCHI Video Presentation, Remote AND Design Use Build's Para.chi Event, Seattle, WA	May 2024
[T1] – <u>Designing and Deploying Digital Information Systems in Sub-Saharan Africa</u> University of Washington CHANGE Seminar, Seattle, WA	Oct. 2023

## WORK EXPERIENCE

<b>Koel Labs – Founder and CEO</b> ◦ Raised \$100K in funding from Mozilla [H2], Next, and partners for computational linguistics research. ◦ First authoring <u>ML</u> and <u>HCI</u> papers [P2], leading team of 3, training SoTA models with <u>PyTorch</u> .	Aug. 2024 – Present
<b>Gooy.AI – Software Engineer</b> ◦ Mentored team of 4 interns through merging 70 pull requests touching 1000s of daily active users. ◦ Deployed <u>ML</u> solutions to 10M+ farmers across 5+ countries, demoed to 193 world leaders at the UN.	Jun. 2023 – Sep. 2024
<b>Akvelon, Inc. – Software Development Intern</b> ◦ Led team of 4 to make 200K open-source contributions to 7 Microsoft repos across 27 pull requests [H1].	Jun. 2023 – Aug. 2023

## LEADERSHIP

<b>Seattle Tutoring Partners – Founder and Research Mentor</b> ◦ Mentoring research projects for High Schoolers, and collaborating on internationally recognized projects. ◦ Developed software for 500+ youth musicians and antenna software for 8K+ aspiring scientists.	May 2022 – Present
<b>Cascade Enrichment – Technical Lead</b> ◦ Managing remote certification and coding curriculum for 30+ tutors; online platform for 100+ students.	Sep. 2022 – Sep. 2024
<b>Design Build Fly – Lead Computer Scientist</b> ◦ Coordinated optimization algorithms and data analysis for 30 engineers; we placed 3rd nationally.	Sep. 2023 – Sep. 2024

## HONORS AND DISTINCTIONS

[H5] Meta+8VC Next Llama Stack Hackathon: 1st Place, \$1K Prize	2025
[H4] Microsoft Imagine Cup: Semifinalist, \$5K cloud credits	2025
[H3] CRA Outstanding Undergraduate Researcher Award: Honorable Mention	2025
[H2] Mozilla Builders Accelerator: \$39K research grant, \$35K cloud credits	2024
[H1] Akvelon Mentor's Choice: Outstanding Leadership	2023

## PROGRAMMING SKILLS

Languages: JavaScript, TypeScript, Python, Java, C, C++, C#, SQL	7+ years
Tech: Cloud (GCP, Azure, AWS), REST, Pytorch, Auto Testing, React, Docker, Unix, Git	4+ years