Alexander Metzger

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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, inventing the Computer Vision pipeline, designing the UI, running extensive evaluations.

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. MAPLE: Machine Aided Pronunciation Learning via Entertainment.

[P1] − *Planned for NeurIPS, First*   HCI, CV, Medical ML

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

TALKS

[T6] − *The Future of Language Learning*   Dec. 2024
Mozilla Builders Accelerator Demo Day, San Francisco, CA

[T5] − *Computational Linguistics for Machine Aided Pronunciation Learning*   Oct. 2024
University of Washington Computational Linguistics Group, Seattle, WA

[T4] − *Local AI and Machine Aided Pronunciation Learning*   Sep. 2024
Mozilla Builders Accelerator Kickoff Event, New York, NY

[T3&2] − *eKichabi v2: Designing and Scaling a Dual Platform Technology in Rural Tanzania*   May 2024
ACM SIGCHI Video Presentation, Remote AND Design Use Build's Para.chi Event, Seattle, WA

[T1] − *Designing and Deploying Digital Information Systems in Sub-Saharan Africa*   Oct. 2023
University of Washington CHANGE Seminar, Seattle, WA

WORK EXPERIENCE

Koel Labs − *Founder and CEO*   Aug. 2024 − Present
- ○ **Raised $100K in funding** from Mozilla [H2], Next, and partners for computational linguistics research.
- ○ **First authoring** ML and HCI papers [P2], leading team of 3, training SoTA models with PyTorch.

Gooey.AI − *Software Engineer*   Jun. 2023 − Sep. 2024
- ○ **Mentored** team of 4 interns through merging 70 pull requests touching 1000s of daily active users.
- ○ **Deployed** ML solutions to 10M+ farmers across 5+ countries, demoed to 193 world leaders at the UN.

Akvelon, Inc. − *Software Development Intern*   Jun. 2023 − Aug. 2023
- ○ **Led** team of 4 to make 200K open-source contributions to 7 Microsoft repos across 27 pull requests [H1].

European Environment Agency − *Data Science Intern*   April. 2020 − May. 2022
- ○ **Authored** 3 technical reports and 5 data analysis scripts used internally and by scientists in 40 countries.

LEADERSHIP

Seattle Tutoring Partners − *Founder and Research Mentor*   May 2022 − Present
- ○ **Mentoring** research projects for High Schoolers, and collaborating on internationaly recognized projects .
- ○ **Developed** software for 500+ youth musicians and antenna software for 8K+ aspiring scientists.

Cascade Enrichment − *Technical Lead*   Sep. 2022 − Sep. 2024
- ○ **Managing** remote certification and coding curriculum for 30+ tutors; online platform for 100+ students.

Design Build Fly − *Lead Computer Scientist*   Sep. 2023 − Sep. 2024
- ○ **Coordinated** optimization algorithms and data analysis for 30 engineers; we placed 3rd nationally.

HONORS AND DISTINCTIONS

[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   6+ years
Tech: Cloud (GCP, Azure, AWS), REST, Pytorch, Auto Testing, React, Docker, Unix, Git   3+ years