Simret Araya Gebreegziabher (she/her)

University of Notre Dame

sgebreeg@nd.edu, (+1) 574 621 2665

EDUCATION

University of Notre Dame - Ph.D.
>Computer Science and Engineering
>January 2021 - Present
>Advisor: Toby Jia-jun Li

Addis Ababa Institute of Technology, Addis Ababa - B.Sc
>September 2016 - October 2021 - GPA of 3.82/4.0
>Honor: Addis Ababa University 2021 Great Distinction

RESEARCH INTERESTS

Human Computer Interaction, Human-AI Collaboration, Computer Assisted Data Annotation, HCI for Societal Sustainability, ICT for Development

RESEARCH EXPERIENCE

PaTAT: Human-AI Collaborative Qualitative Coding with Explainable Interactive Rule Synthesis - In submission to CHI'23

Simret Gebreegziabher, Zheng Zhang, Ellena Glassman, Toby Jia-jun Li

Description: The use of AI assistance in data annotation has made significant progress. However, qualitative coding in thematic analysis, as a specific type of annotation task, has unique characteristics that make effective human-AI collaboration difficult. Informed by a formative study, we designed PaTAT, a new AI-enabled tool that uses an interactive program synthesis approach to learn flexible and expressive patterns of user-annotated codes in real-time as users annotate the data. To accommodate the ambiguous, uncertain, and iterative nature of thematic analysis, the use of user-interpretable patterns allows users to understand and validate what the system has learned, make direct fixes, and easily revise, split, or merge previously annotated codes.

Random Forest Based AI Classifier and Explainer

Advisor: Valeria Bertacco - University of Michigan

Description: The goal of this project was to boost the performance of a Random Forest based classification explainer by developing hardware and software solutions to this end: we worked on the data layout, on ad-hoc data structures and on designing dedicated hardware acceleration blocks. Link

Composable Benchmarking

Advisor: Valeria Bertacco - University of Michigan

The 2030 decade will rely on very advanced and specialized computing capabilities, executing several complex algorithms at high performance, to enable applications ranging from virtual and augmented reality, complex classifications and explainable ML-based decisions, and data analyses at a much more advanced level than it is possible today. The goal of this project is to 1) develop and adapt core algorithms from those future domains to create benchmarks for computing system researchers, 2) design a synthetic, parametric benchmark generator that produces additional benchmarks resembling the same type of workloads. Link

WORK EXPERIENCE

Teaching Assistant - University of Notre Dame

January 2022 - present

- I worked and continue to work as a teaching assistant to courses like Computer Architecture and Human-Computer Interaction. As a teaching assistant I hold office hours, advise students and grade exams and papers.

Research Assistant - African Undergraduate Research Adventure University of Michigan

May 2020 - February 2021

- Working as a research assistant at the University of Michigan with Professor Valeria Bertacco as my faculty advisor. I worked on Composable Benchmarking and Explainable AI.

Intern - Addis Ababa University-Industry Linkage

June 2019 - February 2020

- Worked alongside teachers and mentors to organize the first AI in Ethiopia Conference which was held in October 2019 at Addis Ababa Institute of Technology, Addis Ababa, Ethiopia.

Teaching Assistant - Girls Can Code

Summer 2018

- A program hosted by X-hub Addis that was working to help girls get into tech before reaching higher education and joining the university

SKILLS

- Qualitative Research, Qualitative coding
- Programming languages: Java, Python, Javascript, PHP, C++, C#, Kotlin
- Database: MySql, NoSql, Oracle
- Android Programming, Web development

AWARDS

- 2020 GRIESHMA Research Scholar at Indian Institute of Technology-Chennai
- First place winner at Oracle's Back to school Ethiopia hackathon 2019
- Certified IBM blockchain developer- Mastery Award

PROFESSIONAL SERVICE

- Student Volunteer:
    - FaCCT 2022
    - NeurIPS 2020
    - AI in Ethiopia 2019

Keywords: Human-Computer Interaction, Human-AI Collaboration, Human-in-the-loop Machine Learning, Natural Language Processing, Data Annotation, Web Programming