

# MERON ZERIHUN DEMISSIE

PH.D. STUDENT | COMPUTER SCIENCE & ENGINEERING

📍 2403 Bishop St. Apt. 04  
Ann Arbor, MI, 48105  
United States

(984) 291-1278 📞  
mdemissi[at]umich[dot]edu ✉

[Website](#)



## PROFILE

My research primarily focuses on studying **how to combat vulnerabilities in existing sensitive applications** and designing **architectures for efficient and tamper-proof privacy-enhanced computing**. I am passionate about developing solutions for impervious next generation computing. I aspire to raise awareness on the importance of incorporating security in design to realize secure and robust systems.

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## EDUCATION

**Ph.D. | Computer Science and Engineering | University of Michigan | Ann Arbor, Michigan**

January 2022 – Present

Advisor: Professor Todd Austin, Area: Computer Architecture, Privacy and Security

**B.Sc. | Software Engineering | Addis Ababa Institute of Technology (AAiT) | Addis Ababa, Ethiopia**

September 2016 – October 2021

Graduated with high honors, 3.81 GPA

**High School Diploma, Applied Science Division | Gibson School Systems (GSS) | Addis Ababa, Ethiopia**

September 2002 – July 2016

Graduated with high honors, Class Valedictorian

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## EMPLOYMENT HISTORY

**Graduate Student Research Assistant, University of Michigan**

May 2022 – Present

- Designed, developed, and modified research experiments alongside teams of researchers.
- Performed thorough research and analysis on data, and created reports on research activities.

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## PUBLICATIONS

**ISPASS 2023 | Exploring the Efficiency of Data-Oblivious Programs** | L. Biernacki, B. Mengist Tiruye, **M. Zerihun Demissie**, F. Assamnew Andargie, B. Reagan, T. Austin.

*This work explores the costs of data-oblivious transformations and shows how algorithm redesign can help address these large costs, making such programs practically feasible.*

**SEED 2022 | Sequestered Encryption: A Hardware Technique for Comprehensive Data Privacy |**  
L. Biernacki, **M. Zerihun Demissie**, K. Birkayehu Workneh, F. Assamnew Andargie, T. Austin.

*This work explores how trusted hardware can be leveraged to provide data confidentiality in the presence of vulnerable software while achieving practical performance overheads.*

**SEED 2021 | VIP-Bench: A Benchmark Suite for Evaluating Privacy-Enhanced Computation Frameworks |** L. Biernacki, **M. Zerihun Demissie**, K. Birkayehu Workneh, G. Basha Namomsa, P. Gebremedhin, F. Assamnew Andargie, B. Reagen, T. Austin.

*This work proposes VIP-Bench, a benchmark suite designed with varying operational complexity and computational depth to evaluate competing privacy frameworks fairly and directly.*

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## WORKSHOPS AND PRESENTATIONS

**WISE 2022 | Verifying Computation In Sequestered Encryption | M. Zerihun Demissie, L. Biernacki, T. Austin.**

*This presentation proposes extending Sequestered Encryption to enable verifiable computation.*

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## ACADEMIC TRAININGS

**Gem5 Bootcamp | University of California, Davis**  
July 2022

**Google Android Development | Andela Learning Community (ALC), and Pluralsight**  
September 2020 – February 2021

**Intermediate Machine Learning | Kaggle**  
April 2021

**Web Backend Development | Gebeya Inc.**  
April 2019 – November 2019

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## SERVICE

**Research Mentor | University of Michigan African Presidential Scholars (UMAPS)**  
January 2022 – May 2023

- Collaborated on a project that enhances privacy computation with integrity and safe disclosure capabilities.

**Research Mentor | African Undergraduate Research Adventures (AURA), University of Michigan**  
May 2022 – July 2022

- Assisted a student working on a project of building an interface for the [PALISADE](#) homomorphic encryption library to [VIP-Bench](#)

## K-12 OUTREACH ACTIVITIES

### Primary Instructor | Discover Engineering, University of Michigan

June 2022

- Coordinated a workshop on Computer Science & Engineering for 8th-10th grade students, exploring how a computer works, basic algorithmic concepts, and touring Michigan research labs.

### Student Mentor | Technovation Challenge, and Ministry of Innovation and Technology

March 2020 – April 2020

- Mentored female high school students in understanding the basics of programming and developing solutions for outstanding problems within our community

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## EXTRACURRICULAR ACTIVITIES

### Board Member, Ensemble of CSE Ladies+ (ECSEL+), University of Michigan

September 2022 – Present

ECSEL+, the Ensemble of CSE Ladies+, is a group to support graduate women and gender minorities in CSE at the University of Michigan.

### Member, ITSC-INSPIRE, Addis Ababa Institute of Technology

September 2018 – September 2021

ITSC-INSPIRE is a student group that organizes ICT-related events to keep students informed about the growth and impact of today's technology.

### Member, Drop of Life, Addis Ababa Institute of Technology

September 2017 – September 2021

Drop of life is a club that provides volunteer work on spreading health awareness among students. It also organizes blood donations twice a year at AAiT, AAU.

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## HONORS AND AWARDS

Certificate of Great Achievement, AAiT  
2021

Award of appreciation of Top 5 Female Students in AAiT  
2017

Certificate of Valedictorian, GSS  
2016

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## SKILLS

### Programming Languages

C/C++, Python, Java, Javascript, C#, Go, Kotlin

### Other Software Skills

Bash Scripting, Database (SQL, MongoDB, Firebase), DBMS (MySQL, Oracle), Libraries (JQuery, NodeJS), Frameworks (Spring, ASP.Net, Ruby On Rails), Platforms (Android Studio, Visual Studio)

### **Architectural Simulations**

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### **Compiler Extensions**

Clang, LLVM

### **Interpersonal Skills**

Effective written and verbal communication, Adaptability, Teamwork, Responsibility, Positive Attitude

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## **LANGUAGES**

Native: Amharic

Highly Proficient: English