

# Yoseph Berhanu Alebachew

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## Professional Summary

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Graduate student and researcher with over 10 years of software engineering experience, specializing in AI-powered tools to enhance software development efficiency. Proficient in Software Development, Deep Learning, and data-driven solutions, with a proven track record of designing impactful systems and leading innovative research initiatives. Passionate about bridging technology and user needs to drive productivity and innovation.

## Skills

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- **Programming Languages:** Python (intermediate), Java (advanced), C (intermediate), JavaScript/TypeScript (advanced), C/C++ (intermediate), SQL (advanced)
- **Frameworks Tools:** PyTorch, TensorFlow, scikit-learn, Angular, Spring Boot, Java EE, NodeJS, .NET Core, MongoDB, PostgreSQL
- **Software Engineering:** Object-Oriented Design, Design Patterns, Microservices, SOA, Continuous Delivery Practices
- **Data & Research Analysis:** Quantitative and Qualitative Research, Machine Learning, Data Analysis, Debugging

## Personal Attributes

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Curiosity, Resilience, Commitment, Quick Learner, Self-motivated, Strong Analytical Problem-Solving

## Relevant Experience

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**Graduate Research/Teaching Assistant**, Virginia Tech – Blacksburg, VA 08/23 – Present

- Designed and currently developing an AI-powered visualization tool to enhance large program comprehension, aiming to improve developer efficiency and reduce cognitive load.
- Conducted a mixed-method study to understand perspectives, expectations, and challenges in the source code review process related to bias, leading to actionable insights, such as onboarding challenges and documentation limitations.
- Provided hands-on support for assignments and projects in Machine Learning, Cloud Software Development, and Algorithm courses, contributing to enhanced student understanding and improved project outcomes.

**LIS Specialist**, World Bank Group – Addis Ababa, Ethiopia 03/22 – 07/23

- Conducted assessments of six Ethiopian land information systems for the Integrated Land Management Project (ILMP), providing the basis for high-level requirements, architecture, and strategic recommendations to enhance governmental land management capabilities.
- Developed high-level requirements and outlined investments for a national land management system, leveraging assessment insights to deliver situation analyses, design recommendations, and cost-benefit analyses, ensuring seamless interoperability, streamlined data management, and informed decision-making.

**Information Technology Consultant**, NIRAS International Consulting – Addis Ababa, Ethiopia 07/21 - 09/22

- Developed and maintained components for the National Rural Land Information System (NRLAIS) for the Ministry of Agriculture, Ethiopia, using Java EE and Python (QGIS plugin), enabling efficient land management and streamlined geospatial data processing.
- Advised on strategic decisions for the national roll-out of NRLAIS, addressing incremental functionality additions, regional expansion challenges, and diverse regional rules, leading to an open-source-based implementation that saved the project an estimated \$10M over 10 years in license costs.

**Tech Lead**, Digital Medarbejder AS – (Norway, Remote), Addis Ababa, Ethiopia 12/19 – 08/21

- Designed and developed 12 micro-service-based SaaS applications using .Net Core RESTful APIs and

progressive Angular front-end apps, delivering scalable and efficient business solutions.

- Devised and implemented CI/CD strategies using GitLab and Azure DevOps, resulting in a 45% improvement in delivery time.
- Developed and standardized reusable libraries and packages, including authentication, authorization, and auditing services, enhancing code reusability and reducing development overhead.
- Designed and developed a suite of reusable libraries for authentication, authorization, auditing, communication, UI framework, and a common services library with semi-automatic localization and external API integration proxies , achieving a 28% improvement in project bootstrap speed.
- Mentored junior developers and led a team of 18 by fostering a collaborative environment, promoting peer learning and cooperative problem-solving that enhanced team performance and knowledge sharing .
- Introduced map-based services for cross-application use, including support for the Norwegian SOSI formats, enabling seamless geospatial data integration and migration.

**Software Developer**, DAI – Addis Ababa, Ethiopia

11/14 – 06/17

- Developed two systems for rural land administration, one of which became the foundation of the National Rural Land Administration System.
- Designed and developed a mass registration system (MASSREG) using Java EE, PostGIS, and Python-enhanced QGIS, certifying over 14 million landholders across 150 Woredas.
- Designed and developed a land transaction management system that supported over 20 land transactions with customizable rules for each, successfully deployed in all Woredas following MASSREG.
- Designed a custom Management Information System (MIS) with Laravel and MySQL, pioneering an incremental synchronization feature for offline data integrity across 150 deployment sites.

## Education

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**Virginia Tech**, Ph.D. in Computer Science

Expected: 04/27

- Research Focus: Building AI powered tools for software developers in large software projects.
- Relevant Coursework: Software Engineering and Machine Learning (e.g., CNN, VAE, GAN, Reinforcement Learning, Self-Supervised Learning).

**Addis Ababa University**, M.Sc. in Computer Science

06/14

- Thesis: "A Framework for Multi-source Prefetching Through Adaptive Weight" – **Grade: Excellent**
- Achievements: Graduate Valedictorian, GPA: 3.96.

**Addis Ababa University**, B.Sc. in Computer Science

06/10

- Achievements: Valedictorian, GPA: 3.74.

## Publication

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**Yoseph Berhanu Alebachew**, Chris Brown. "Automatic Bias Detection in Source Code Review". Presented at Workshop of the Psychology of Programming Interest Group (PPIG) – Sept 2024

## Additional Experience and Awards

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**First Place Winner**, African RoboCup Soccer Competition – 2017

Led and mentored a team of 6 undergraduates in applying robotics research to real-world problem-solving, culminating in a first-place finish in a continent-wide competition.

**Certificate of Appreciation**, Department of Computer Science, Addis Ababa University – 2017

Recognized for outstanding leadership in initiating and managing projects in AI and robotics, fostering innovation and collaboration among students.