

Dereje Tadesse Abzaw

Addis Ababa, Ethiopia

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Professional Summary

Passionate Software Engineer and AI Developer with 8+ years of experience in full-stack development, AI engineering, and project management. Experienced in developing scalable, high-performance software solutions with expertise in Python, JavaScript, C++, and AI-based technologies. Proven track record in leading teams, managing technical projects, and delivering innovative solutions for global clients.

Technical Skills

- **Languages:** Python (for ML, web development), JavaScript, C++, Ruby, Linux Shell Scripting
 - **Frameworks & Libraries:** Django, Flask, TensorFlow, PyTorch, ReactJS, NodeJS
 - **Tools & Platforms:** Docker, Git, AWS (for model deployment), Google Cloud, GraphQL, Kubernetes
 - **Databases:** MongoDB, MySQL, PostgreSQL, SQL Server, SQLite
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Work Experience

NthDS, Houston, Texas, USA (Remote) | Machine Learning Engineer & Full Stack Developer |
May 2022 - Present

- Designed and trained CNN-based object detection models for well log data extraction and digitization.

- Developed instance segmentation models for chevron tape detection, improving accuracy in automated extraction by 3-4%.
- Implemented TIDE metric evaluation to assess object detection model performance.
- Automated data cleaning and annotation pipelines, improving data quality and accelerating the training process for machine learning models.
- Deployed and tested CNN-based object detection and instance segmentation models on Google Compute Engine and AWS VM instances.
- Integrated web scraping solutions using BeautifulSoup and Selenium to collect additional training data.
- Optimized data storage and retrieval by implementing AWS S3 and Google Cloud Buckets, ensuring faster access and efficient data management.
- Collaborated with cross-functional teams to refine computer vision models for well log data extraction and chevron tape detection.

AhazIO, Addis Ababa, Ethiopia | Project Manager & Full Stack Developer | March 2020 - Present

Founded and led a software development company, specializing in custom client-based solutions for industries including advertising, marketing, and manufacturing.

- Designed and developed AI-driven vocal removal algorithms using LSTM and RNN models, significantly enhancing the accuracy and quality of karaoke audio.
- Developed an Android-based psychology research app using Flutter for Anbessa Beer's "Crafted with Courage" BTL activation, which analyzed users' courage levels through interactive assessments to support the launch of the new beer, contributing to the app's functionality for academic studies (not involved in the study design itself).
- Initiated the development of TV and radio monitoring software to track broadcast data for advertising agencies, improving system performance despite challenges in real-time data processing.

- Built custom HR management and attendance systems with two iterations: a web-based system using ReactJS, ExpressJS, MongoDB, and a desktop application with Python, PyQt5, and integrated fingerprinting for attendance tracking.
- Led the full-stack development of multiple websites, focusing on UI/UX, SEO, and database management. Technologies used include WordPress, PHP, HTML, CSS, React, and TailwindCSS to create responsive, user-friendly websites.
- Integrated e-commerce solutions and booking systems for clients, significantly increasing business opportunities and client engagement.

Tech1Factory, Atlanta, Georgia, USA | Full Stack Developer (Remote) | Dec 2021 - Mar 2022

- Contributed to Auxygen, a social music streaming platform similar to Spotify.
- Developed key features such as tagging users, notifications, and social interactions.
- Worked with React, React-Native, GraphQL, and PostgreSQL.

iCog Labs, Addis Ababa, Ethiopia | AI Developer, Researcher, Project Coordinator | Jan 2017 – Feb 2020

- Collaborated with Hanson Robotics on the Sophia humanoid robot, contributing to the Emotive Speech Generation project, adding emotional depth to speech via TTS engines.
- Developed prosody prediction for emotion-based speech synthesis, resolving jitter issues and optimizing real-time speech processing.
- Integrated the system with ROS (Robot Operating System) and developed a Graphical User Interface (GUI) using PyTkinter to simplify system access and integration.
- Trained and validated RNN and LSTM models for emotion-based speech synthesis to enhance expressiveness and naturalness.
- Contributed to the EveNet project, focusing on generating realistic facial animations for Sophia robot by collecting datasets and experimenting with network architectures to improve facial expression accuracy.
- Integrated Gazebo simulator with Steam Audio Library to simulate 3D audio environments, enabling realistic sound propagation for robotic applications.

Education

- **MSc in Artificial Intelligence** – Addis Ababa University (2020 - 2023)
 - Thesis Title: Ensemble of Deep Learning Models for Broadcast Content Classification Using Video Scene Segmentation
 - (Publications in Progress: Spatial Attention for Efficient Conditional Computation in Video Object and Semantic Segmentation)
 - **BSc in Electrical and Computer Engineering** – Addis Ababa University (2011 - 2016)
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Certifications

- **Deep Learning Specialization** – Neuromatch Academy, 2022: Focused on neural networks, CNNs, RNNs, and deep learning applications for real-world problems
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References

Available upon request.