Zelalem Haile

+1 574 310 1807 | zhaile@nd.edu |https://www.linkedin.com/in/zelalem-haile/

EDUCATION

University of Notre Dame | Notre Dame, IN   Graduation Date: May 2027
B.S. Computer Science   GPA: 3.81

EXPERIENCE

Iris Recognition and Presentation Attack Detection| CSE Summer Enrichment Internship   May 2024 – Aug 2024
& Computer Vision at ND
- Developed a Python program to efficiently curate 2,651 iris images from the ND3D dataset (over 20,000 images), automating the generation of a PDF file with 16 images per page, each labeled for easy identification.
- Developed a Python script utilizing the 'pexpect' library to automate the operation of the IriTech Iris sensor, capturing iris images from printed sources and labeling each image with the corresponding name from a CSV file, streamlining the data acquisition process.
- Structured the dataset into train, test, and validation sets for balanced model training and evaluation. Implemented and optimized a ResNet-18 model for iris Presentation Attack Detection (PAD), modifying the final layer for binary classification and achieving perfect detection performance (BPCER and APCER of 0.00%).
- Configured training parameters (batch size: 32, learning rate: 0.001, optimizer: Adam, loss function: cross-entropy, epochs: 200) to ensure flawless model accuracy in distinguishing between bona fide and printed attack images.
- Presented weekly progress to a mentor and cross-departmental members, facilitating continuous feedback and collaboration, and designed a scientific research poster to showcase the project's key findings and methodologies at the University of Notre Dame Summer Undergraduate Research Symposium, presenting to an audience of over 1,000 people.

Data Club |Notre Dame, USA   Jun 2024 – Jul 2024
- Collaborated with club members to analyze 10 years of data from Kroger, identifying the best and worst performing products across various locations, and presented our findings to Kroger in Chicago
- Developed and implemented advanced data manipulation scripts using Python/R to efficiently handle and analyze large datasets, replacing traditional methods like Excel VLOOKUP to ensure accuracy and prevent computational issues.
- Designed and optimized a strategic roadmap for the project, focusing on key deliverables and reverse-engineering from the final presentation requirements.
- Created clear, purpose-driven data visualizations using Python and Excel, ensuring clarity and focus on key data points. Emphasized the use of high-quality visuals and avoided the use of low-quality screenshots from Tableau/Python.
- Synthesized internal 84.51° data with external market research to identify Kroger's performance gaps in emerging categories like Plant-Based Meat. Provided actionable, data-driven recommendations to enhance category performance and capitalize on market opportunities.
- Collaborated with club members in a Divide & Conquer approach, effectively managing project timelines and delegating tasks to leverage technical and non-technical team members' strengths.

PROJECTS

Crime Chronicles | Principles of Computing Project   April 2024
- Led a team in developing a webpage that analyzes crime rates in South Bend and across the USA, providing insights on crime trends to students at the University of Notre Dame

Sports Analysis | Engineering Computing   April 2024
- Worked in a team to develop an application analyzing Olympic data from the 1800s to 2016 in MATLAB, delivering comprehensive insights and historical trends.

Mobile Support/Stand| University of Notre Dame   Nov 2023
- **Designed a prototype for phone holder in Solidworks and printed a 3D phone holder in collaboration with EIH**

Image Mata Data Visualizer| University of Notre Dame   Nov 2023
- Created a Python script to extract and display object bounding boxes and labels from XML metadata and images using BeautifulSoup, OpenCV, and scikit-image.

TECHNICAL AND LANGUAGE SKILLS

Language: English(fluent),Amharic(fluent), Wolaitato(fluent)
Technical: Python, CSS(+Bootstrap), html, Solid Works, MATLAB, JavaScript