TSEGA ABEBE

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EDUCATION

Yale-NUS College, National University of Singapore — Singapore
B.Sc. (Hons) Mathematical, Computational and Statistical Sciences | Major **GPA**: 4.5/5 — **Aug 2021 – May 2025 (**Expected**)**
Relevant Coursework: Data Structures and Algorithms, Software Engineering, Machine Learning, Programming for Data Science, Database Management Systems, Programming Operating Systems, Software Verification and Validation, Computer Networks

Yale University — New Haven, CT
Exchange program, B.Sc. Computer Science — **Jan 2024 – May 2024**
Relevant Coursework: AI for Future Presidents, Full Stack Web Programming, Object-Oriented Programming, Human-Computer Interaction (HCI)

PROFESSIONAL SKILLS

- Languages: Python, C/C++, JavaScript, Java, HTML, CSS, SQL, Ocaml, R, LaTeX
- Cloud/DevOps: Azure, Git/GitHub, Linux, Kubernetes, Flask, Docker, Rest API
- AI/ML: Scikit-learn, Pandas, NumPy, TensorFlow, Keras, PyTorch, RAG, LangChain
- Tools & Methods: MongoDB, React, Postman, Figma, Power Platform, MS Copilot Studio, Agile

EXPERIENCE

Robert Bosch (SEA), Singapore | AI/Cloud Engineer Intern — **May 2024 – Present**
- Developing an **agentic AI** chatbot (Teams-integrated) leveraging Azure and Microsoft Power Platform (including Copliot) to automate demand workflows (~**3000** weekly) via NLP/document uploads and enable real-time request tracking through RESTful APIs.
- Architected and deployed a low-code automation solution that reduced document search time by **70%** and estimated saving of **€500 monthly** via OCR and advanced search integration.
- Engineered parallel processing workflow in Power Automate, accelerating data processing by **40%** for enterprise-scale survey datasets.
- Created scalable prototypes (**POCs**) and technical documentation by collaborating with stakeholders to align solutions with enterprise needs, including researching and proposing a ticketing system to streamline support processes.

Summer Research Program, Yale-NUS College | Software Developer Intern — **May 2023 – Jul 2023**
- Collaborated in constructing a publicly accessible database of over **150** spectral line detection for galaxies (Website).
- Engineered a responsive and elegant pagination component for the database web interface. Enhanced user experience by dynamically loading galaxy datasets on demand, optimizing website speed and efficiency by **50%**.
- Integrated a feature leveraging JavaScript, enabling about **500 users** to export search results in CSV format.

eGROCERY Web Application, Yale-NUS College | Software Architect — **Jan 2023 – Apr 2023**
- Authored an extensive SRS document for our final project following IEEE standards, detailing the software's functionalities and serving as a critical reference for all stakeholders, which resulted in a **40% faster** development cycle.
- Architected a robust backend infrastructure with Python (Flask framework), focusing on performance, scalability, and security.
- Designed a MongoDB database and implemented a comprehensive set of **RESTful API** endpoints for dynamic inventory and user management that handled over **10,000** products and **1,000** users; Rigorously tested with Postman for reliability and performance.
- Directed the project with daily Scrum meetings, followed Agile methodology and used GitHub for CI/CD processes (GitHub).

PROJECTS

Customer Churn Prediction Using Supervised Learning in R (Ongoing**)**
- Developing a supervised learning model in R to predict customer churn using a **71,000+** record dataset, focusing on improving accuracy through extensive data cleaning, pre-processing, and feature selection.
- Conducting EDA to identify key predictors and usage patterns, and visualizing insights to support data-driven retention strategies.

Sentiment Analysis Using Deep Learning (Report**)**
- Developed a deep learning pipeline in TensorFlow for multi-class emotion classification, achieving **50%** accuracy on the GoEmotions dataset (**211,225** samples, **27** labels); Experimented with CNN, LSTM and DNN architectures to evaluate model performances.
- Enhanced text preprocessing with tokenization, lemmatization, and embeddings, optimizing input and improving prediction consistency.

Santorini Game Implementation with Design Patterns (Github**)**
- Built a modular CLI version of the Santorini board game using Strategy, Observer, and Command design patterns, featuring AI opponents with heuristic-based decision-making, a scoring system, and undo/redo functionality.

Gesture-Controlled Feedback System (Demo**)**
- Led a team of four in developing an interactive system using Kinect Azure motion sensor to capture hand gestures, allowing students to rate lectures on a scale of 1-10, providing real-time feedback to professors. Won Class Choice Award for my HCI class at Yale.

LEADERSHIP & OTHER EXPERIENCE

The Afro Society, Yale-NUS College | President — **Aug 2022 – Present**
- Spearheaded cultural, diversity, and professional engagement initiatives, including **8+** panel discussions and workshops with **50+** attendees, driving a **40% increase in community participation** among International students and professionals.

College Digital Archives, Yale-NUS College | Student Associate Senior Lead — **Jan 2022 – Present**
- Manage metadata for **56,000+** digital archive items, overseeing creation, validation, and quality control, while supervising and training a team of **6** student associates in Agile workflows.