

TSEGA ABEBE

28 College Ave West, Singapore | tsega.abebe@u.yale-nus.edu.sg | +65 84596216 | [Linkedin.com/in/tsega-pache](https://www.linkedin.com/in/tsega-pache)

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, Microsoft's Copilot Studio and Power Platform 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 **€500 monthly** via OCR and advanced search integration.
- Engineered parallel processing workflow in Power Automate, accelerating survey data processing by **40%** for enterprise-scale 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.
- Guided CI/CD processes including rigorous testing, debugging, deployment, and maintenance of changes, ensuring seamless interaction with nearlyfreespeech.net hosting service.

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 the 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 can handle over **10,000** products and **1,000** users.
- Directed the project with daily Scrum meetings, followed Agile methodology and used GitHub for CI/CD processes ([GitHub](#)).

PROJECTS

Sentiment Analysis Using Deep Learning ([Report](#))

- Developed a deep learning (NLP) model with TensorFlow, capable of predicting **27** fine-grained human emotions from textual data, significantly advancing sentiment analysis capabilities.
- Experimented with multiple neural network architectures, including DNN, LSTM, and CNN, to refine and evaluate model performances, with the CNN model attaining a **60%** prediction accuracy on the GoEmotions dataset from Kaggle.

Santorini Game Implementation with Design Patterns ([Github](#))

- Built a CLI version of the Santorini board game by applying design patterns (Strategy, Observer, Command) to create a modular and maintainable codebase.
- Incorporated AI opponents with heuristic-based decision-making; implemented 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, **5** dinner programs, and workshops (**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, reducing metadata errors by **30%**.