

EDUCATION

Nanyang Technological University

B.Eng in Electrical & Electronics Engineering. (Honors)

Singapore
August 2020 - July 2024

Relevant Courses:

(1) Data Structures and Algorithms, (2) Introduction to Data Science & AI, (3) Computational Thinking to Programming (in C), (4) Artificial Intelligence and Data Mining, (5) Image Processing & Computer Vision, (6) Web App Design, (7) Software Engineering, (8) Machine Learning Design & Applications, (9) Signal Processing

Republic Polytechnic

Diploma in Mobile Software Development

Singapore
April 2015 - April 2018

Relevant Courses:

(1) Object-Oriented Programming, (2) Database Systems, (3) Advanced Android Programming, (4) Advanced iPhone/iPad Programming, (5) Advanced Web Application Development, (6) Software Development

DeepLearning.AI, Stanford University

Virtual Training and Learning Development

(1) Advanced Learning Algorithms

YouTube - Daniel Bourke
Learn PyTorch for deep learning

ACADEMIC PROJECTS

Final Year Project (NTU)

August 2023 - August 2024

School assigned Capstone Project. To add on work to a published paper, which identified issues of current Language Models generating misinformation due to hallucination.

Skills: NLP

- Extensively researched techniques to reduce hallucinations in Language Models, identifying innovative strategies to improve model accuracy.
- Led the fine-tuning, analysis, and comparison of different Language Models using Hugging Face's trainer, benchmarking these models against OpenAI's GPT-3.5.
- Employed Retrieval-Augmented Generation (RAG) and conducted a comparative analysis of its performance versus fine-tuning approaches.
- Developed a Chat Bot by integrating a fine-tuned GPT-2 to enhance conversational capabilities and maintain coherence.
- Creatively addressed the challenge of token limits by implementing a custom tokenization strategy that dynamically adjusted input lengths, ensuring compliance with token constraints without sacrificing context or performance.

Design & Innovation Project (NTU)

August 2022 - December 2022

Led a team of 6, as a Full-Stack developer, creating an E-Commerce App using **Flutter**, improving NTU's market group chat on Telegram.

Skills: App Dev, Storyboarding, Flutter SDK

- Utilized **Figma** to optimize UI controls placement, ensuring seamless compatibility across various screen sizes, and proficiently employed storyboarding techniques.
- Integrated **Firebase** for authentication and data storage.
- Developed functions for most UI controls, enabling user's object uploading to Firebase and search functionalities.
- Successfully deployed apps on both iOS and Android platforms.

Identify Penguins (Personal Project)

- Annotated over 100 images of penguins using CVAT.
- Fine-tuned pre-trained image classification model YOLOv8, to predict and identify my favorite animal.
- Learned the basics of YOLO coordinates vs. OpenCV coordinates.

RELEVANT EXPERIENCES

Groundup.AI

Data Science/IOT Engineer Intern

Singapore
January 2024 - June 2024

Skills: Machine Learning, IOT

- Led the development, validation, and deployment of predictive maintenance Machine Learning models using audio files as training data.

- Directed the development and innovation efforts of IoT sensors and devices.
- Managed the deployment of edge computing and AI models for real-time analytics in client environments.
- Generated and presented comprehensive reports to stakeholders, showcasing the integration of AI with IoT to enhance client confidence and project outcomes.
- Orchestrated and led simulations to refine predictive models and machine learning algorithms.
- Ensured the highest data quality standards, guiding the Data Science Team in developing robust predictive models for IoT applications.
- Learned and spearheaded the use of containerization techniques (like Docker) to package and deploy applications in IoT sensors.
- Oversaw the utilization of GIT source control to manage multiple repositories and branches for the intern team.
- Internship Project 1:**
- Collaborated with two team members to use Bash, Python, and Docker to develop and deploy edge computing solutions to identify anomalous audio signals created by lapper machines.
- Internship Project 2:**
- Collaborated with three team members to employ Computer Vision models to identify non-compliance with workplace safety regulations in the Singapore Armed Forces (SAF) warehouses.

Hummingbird Bioscience

AI Engineer/Web Dev Intern

Singapore
September 2023 - December 2023

Skills: Machine Learning, Web Dev

- Fine-tuned, tested and evaluated different Large Language Models, benchmarked against GPT-3.5/GPT-4
- Utilized **Python** frameworks (**LangChain** and **Streamlit**), to build an in-house PDF Chatbot with the fine-tuned model, allowing users to query the Chatbot on uploaded PDFs.

Internship Project 1:

- Applied **HTML Programming** with **FastAPI** to revamp Web App for displaying dashboard of AI-generated summaries of open access papers that were retrieved from Semantic Scholar API.

Bosch GmbH

Data Science Intern

Singapore
June 2022 - July 2023

Skills: Machine Learning, Data Engineering, Data Visualization, Deep Learning

- Conducted extensive literature reviews on anomaly detection in HVAC systems, successfully translating academic findings into practical code implementations.
- Collaborated with two Research Scientists in the development of AI-based control algorithms for smarter and more sustainable HVAC systems, leading efforts in data collection, exploration, mining, and presentation.

Internship Project:

- Designed and implemented a Python algorithm to query, process, and input data into a time-series model for accurate predictions.
- Developed forecasting models for effective anomaly detection.
- Created and deployed PowerBI dashboards with data visualization to enable users to quickly identify anomalies at a glance.

Long Cai Technologies

Mobile Software Developer Intern (iOS) (Overseas Experience)

Harbin, Heilongjiang, China
October 2017 - March 2018

Skills: Mobile App Development, Storyboarding, Swift, Firebase

- Improved iOS UI by skillfully adopting storyboard objects to achieve cleaner and user-friendly appearance.
- Enhance cross cultural knowledge with respect to different values, norms, traditions, practices and beliefs overseas.
- Recognized the importance of diversity due to knowledge transferring and sharing that sparked creativity.

Internship Project:

- Applied **Swift Programming** with Firebase features (e.g., authentication, chat functionalities) to enhance app's capabilities and user experience.

SKILLS/TECH STACK

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| • Python Machine Learning frameworks (pandas, PyTorch, scikit-learn, XGBoost, fbprophet, LangChain, HuggingFace) | • GitHub |
| • MySQL | • PowerBI |
| • Mobile App Development (Flutter, Swift, Java) | • VSCode |
| • Web Dev (html, PHP, JavaScript, CSS, Tailwind) | • XCode |
| • NLP, Computer Vision | • Android Studio |
| • Bash scripting | • Docker |
| | • Linear |
| | • Outline |