Dave Martheen Gunawan

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Education

Nanyang Technological University, Singapore *Aug. 2022 - Present*
Information Engineering and Media (First Class Honours) CGPA: 4.78/5.0

Experience

Full Stack Developer Intern *Dec. 2022 - Jun. 2023*
Ilmulia, Jakarta Online

- **Contributed to creating a real-time stock trading simulator** with user dashboard, rank system, stock viewer, and player contests.
- **In-depth understanding of PostgresQL relational databases**, and creating them using Prisma schemas.
- **Designed efficient queries** for various data retrieval requirements using SQL
- **Segregated code modules** into server-side rendering and client-side rendering to optimize render time and performance, overall enhancing the user experience

Personal Projects

SRGAN

Resolution upscaling model based on the paper, "Photo-Realistic Single Image Super-Resolution Using a GAN" by C. Ledig et al.

- Repository: GitHub - SRGAN
- **Implemented the discoveries from the research paper using Tensorflow**, effectively enhancing the generator and discriminator architectures, and optimizing the content and adversarial loss functions.
- **Incorporated custom training procedures** to ensure both the generator and discriminator train at a balanced and consistent pace
- Technology Used: Tensorflow, Keras, Python

Transformer(architecture) chatbot

An encoder-decoder transformer modeled chatbot based on the 2017 paper "Attention is All You Need" by A. Vaswani et al

- Repository: GitHub - transformer-chatbot
- **Used Object-Oriented Programming practices in Tensorflow** to create all modules of the model (encoder, decoder, positional encoder, etc.)
- **Modelled a custom learning rate scheduler** to achieve the minimum loss at each iteration
- **Implemented a sub-word tokenizer** using a BERT tokenizer in Tensorflow Text
- **Containerized the model using Docker** to ensure a Linux environment for the model to run
- Technology Used: Tensorflow, Keras, Python, Docker, Linux(Ubuntu)

Chatbot webapp

A full-stack web app to interact with the raw transformer chatbot model

- Repository: GitHub - chatbot-web
- **Utilized Django as a REST API** to connect both front and back ends of the application
- **Dockerized the backend** to ensure a stable running environment for both parts of the web app
- Technology Used: React, Django, Docker, Tensorflow

Technical Skills

Programming Languages: C/C++, Python, Java, JavaScript, Typescript, SQL
Dev Frameworks and Tools : React, Redux, Tailwind, Next.js 13, Django, Docker, PostgresQL, Prisma
Machine Learning: Tensorflow, Keras, Numpy, Pandas, Matplotlib, scikit-learn
Relevent Coursework: Object-Oriented Programming (IM1003), Data Structures & Algorithms (IE2108), Mathematics II (MH1811)

Other experiences

MAE Club Special Projects Subcommittee *Aug. 2022 - Jul. 2023*

- Contributed to maze design and construction for a pathfinding Arduino in a robotics event
- Worked as a team to design and test model gliders for a workshop attended by local polytechnic students

Interests

Maths, Algorithms, Software Development, Machine Learning and AI, Data Analytics, NLP, Diffusion Models, GANs