

# Cogal Jacques Tracy Pasaol

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## EDUCATION

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**Nanyang Technological University, Singapore**

**Aug 2020-Jun 2024**

**Double Honours Degree Programme (Distinctions)**

Bachelor of Engineering (Computer Science) and

Bachelor of Business (with specialization in Business Analytics)

**Temasek Polytechnic**

**Apr 2015-Apr 2018**

Accounting and Finance (Diploma with Merit)

## WORK EXPERIENCE

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**Shopee**

**Singapore**

*Software Engineer*

*Jun 2024-Present*

*Leveraged these tools: Golang, Protobuf, MySQL, Kafka and Grafana etc.*

Engineer under marketplace core team

- Developed efficient code within a micro-service architecture
- Designed coherent and idiomatic code and sub-systems within complex infrastructure
- Developed RPC APIs

**CPF Board**

**Singapore**

*Software Engineer Intern*

*Dec 2023-May 2024*

*Leveraged these tools: Python (FastAPI), JavaScript (Next.js) and Azure Cloud*

Involved in projects relating to large language models and data engineering

- Developed full stack next.js applications to better serve the public and solve organisational issues
- Improved internal knowledge base accessibility, navigability and coherence by developing LLM and vector search based internal search engine
- Optimised information retrieval of customer-facing internal search engine, improving search relevance by up to 10%

**JP Morgan Chase & Co.**

**Singapore**

*Software Engineer Intern*

*Jun 2023-Aug 2023*

*Leveraged these tools: Python, Java, JavaScript (React.js), Oracle Database and Amazon Web Services*

Delivered key projects in artificial intelligence and proxy gateway solutions for the financial crimes and asset wealth management teams

- Engineered data pipelines to channel big data into AI models, generating actionable insights for risk assessments
- Developed an SDK that enabled a microservice usage, reducing API gateway calls by over 90% through a proxy with a caching layer
- Integrated the SDK solution with an in-production software to prove its efficacy
- Led a hackathon team to victory at JP Morgan's internal Global Hackathon by developing an innovative anti-money laundering solution

**Zuellig Pharma**

**Singapore**

*Data Analyst Intern*

*Sep 2022-Dec 2022*

*Leveraged these tools: Python, PostgreSQL Database and Tableau*

Engineered data solutions for large-scale, unstructured pharmaceutical datasets, streamlining machine learning model training for data scientists

- Automated data retrieval and cleaning, optimizing machine learning training pipelines
- Validated data cleaning effectiveness via hypo testing, achieving at least 70% population coverage

## AWARDS AND HONOURS

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<b>Champion of GIC Code to Impact 2023</b> Led team to win competition with AI enabled full stack solution	<b>2023</b>
<b>Dean's Honours List AY2022/2023 (BUS)</b> Top 5% of student cohort based on annual academic performance	<b>2023</b>
<b>Champion of J.P Morgan Global Hackathon Singapore 2023</b> Led team to win competition with a solution that leverages transformer models	<b>2023</b>
<b>Champion of J.P Morgan Code for Good 2022</b> Developed full-stack solution to address social enterprise problem	<b>2022</b>

## PROJECTS

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### Tutor LLM (Retrieval Augmented Generation (RAG) Community Knowledgebase)

*TechStack: Golang, Python, React Typescript, MySQL, Kafka, Weaviate, Docker, gRPC, Protobuf and Redis*

GitHub: [github.com/jacquescogal/llm-tutor](https://github.com/jacquescogal/llm-tutor)

Developed a full-stack webapp with a distributed backend system for community members to share RAG knowledge base partitions amongst each other

- Leveraged Kafka to decouple heavy processing tasks such as parsing and embedding documents
- Utilised Weaviate as a vector database in consideration of performance and pre-filtering capabilities
- Made use of gRPC and proto buffers for lightweight server communication

### Portfolio Chatbot (Retrieval Augmented Generation (RAG) AI Chatbot)

*TechStack: React, Python Flask, LangChain, OpenAI, AWS EC2, Docker and Pinecone*

Site: [jacquescogal.github.io](https://jacquescogal.github.io)

GitHub (Frontend): [github.com/jacquescogal/jacquescogal.github.io](https://github.com/jacquescogal/jacquescogal.github.io)

Docker Repo (Backend): [github.com/jacquescogal/pf\\_backend](https://github.com/jacquescogal/pf_backend)

Built portfolio with AI chatbot feature that returns context rich answers to users

- Leveraged vector database technology in Pinecone to quickly retrieve relevant document context
- Deployed backend retrieval augmented generation (RAG) AI on cloud server

### Gamified Trivia "Kahoot" and Camp Management App (Built as Tech Lead for Freshman Camp)

*TechStack: React, Python FastAPI, Render Server and AWS DynamoDB*

Site: [jacquescogal.github.io/TOP24\\_Demo\\_Frontend](https://jacquescogal.github.io/TOP24_Demo_Frontend)

GitHub (Frontend): [github.com/jacquescogal/TOP24\\_Demo\\_Frontend](https://github.com/jacquescogal/TOP24_Demo_Frontend)

GitHub (Backend): [github.com/jacquescogal/TOP24\\_Demo\\_Backend](https://github.com/jacquescogal/TOP24_Demo_Backend)

Developed full-stack application to engage new freshmen and coordinate ground operations

- Leveraged asynchronous programming to handle heavy expected I/O operations
- Managed WebSocket connections to support "Kahoot" interaction and booking of locations
- Stress tested server performance with Grafana K6
- Implemented of JWT access tokens and middleware for user authentication

## SKILLSET

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**Programming Languages:** Python, JavaScript (Typescript, React.js, Angular, Node + Express, Next.js), Golang, SQL, Java, C, C++ and C#

**Tools:** Redis, MySQL, MongoDB, AWS, Kafka, Weaviate, Protobuf and Grafana

## CERTIFICATES

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<b>FOCP: FinOps Certified Practitioner</b>	<b>2023</b>
<b>AWS Certified Cloud Practitioner</b>	<b>2023</b>