Lionel Deng

AI engineer | Full Stack Developer

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PROJECTS

Questline.AI - AI powered personalised life path roadmap generator
Tech stack: Python, Pydantic, OpenRouter, Deepseek, Qdrant
Developing an AI SAAS product that creates highly personalised learning curricula using LLMs. By embedding user prompts and profiles, Questline learns how users learn via a comprehensive vector database with which to web search for personalised results. This will be a customisable, highly tailored roadmap in a graph-like structure (inspired by Git) for users to learn and traverse. Goal is to be a digital twin of users' knowledge profile.

EXPERIENCE

Virtusa, Singapore - *Core Python Developer @ Monetary Authority of Singapore (MAS)*

May 2024 - now

Attached to MAS SOC (cybersecurity), working on AI, ML and automation workflows

Domain generation algorithm (DGA) detection system
Tech stack: Pytorch, ScikitLearn, Numpy, Pandas, Splunk, VirusTotal, neural networks
Researched, architected and implemented NLP neural network architectures tailored to detect potential DGA in MAS' DNS traffic, integrated with Splunk and automated reputation lookups (VirusTotal). CNN model with F1-Score of 98%, and reduced false positives from 4000 - 150 per day, identifying genuine threats for SOC analysts to action upon.

DMARC reports processing and visibility system
Tech stack: parsedmarc, Linux, RHEL, bash, Splunk, CRON
Designed and implemented an end-to-end pipeline to read DMARC email reports, evaluate DKIM/SPF policy, and pipe results to Splunk dashboard for downstream security analysis. Handled large amounts of data in porting system files of 3 years into a new pipeline, managing CPU and RAM usage on RHEL server, leading to establishment of MAS SOC's first DMARC visibility dashboard.

SOC ticketing / alerts / action review automation system
Tech stack: Python, Playwright, Pandas, RHEL, bash, CRON, Splunk, ServiceNow, VirusTotal
Drove automation efforts in the 3 cycles of SOC security analyst workflow: ticketing, alert response, and investigative actions. Integrated client-side and server-side solutions using browser automations (playwright), RHEL cron jobs and bash shell scripts to raise tickets in intranet platforms like ServiceNow, send action reports to relevant stakeholders via AMS mailbox API, and aggregate investigative data from Splunk. Reduced analyst man-hours across these tasks from 62 hrs to 5 hrs per month.

Reluvate Technologies, Singapore — *Full Stack Developer*

Sep 2022 - Feb 2023

Crypto platform finance reconciliation:
Tech stack: Python, Pandas, numpy, beautifulSoup4, WSL / Linux, Google drive API, and CRON
Main developer for the automation of client's financial reconciliation and KYC compliance processes.
Reduced the client's monthly reconciliation time from 4 days to 20 minutes.
Reduced price feeds generation from 3 days to 10 minutes.
Tree decay computer vision:
Tech stack: ReactJS, ViteJS, Typescript, Python, Tensorflow, Django, Google drive API
Used computer vision to pre-emptively identify tree decay and drop hazards, with >0.7 F1 score and 87% accuracy.
Responsible for researching and training Tensorflow models and optimizing datasets. Created custom UI to ingest image files from google drive and display computer vision output.

SKILLS

Javascript, Typescript, React, Node.js, Express.js, Next.js, Redux, HTML, CSS, Git

Python, Tensorflow, PyTorch, Pandas, NumPy, OpenCV

NoSQL, SQL, Vector database

Pydantic, LangChain, TaskGen, Generative AI, Prompt Engineering

Cursor, Cline

Neural network, Computer Vision, RAG, LLM, Transformers

EDUCATION

General Assembly
Software Engineering Immersive
May - Aug 2022

Team won the Open Government Products hackathon for our app connecting senior citizens to overcome social isolation

Nanyang Polytechnic
SGUS Enhancing Moving Images
June - Dec 2021

University College London
BA Comparative Literature
2016 - 2021