

Lionel Deng

AI engineer | Python Developer

www.lionel-deng.dev/

Creative problem-solver and AI enthusiast: learning the latest developments in AI, reading research papers, participating in hackathons, building my own AI applications, and trying to implement technologies that anticipate the future.

PROJECTS

Twinem - AI powered personal recommender engine

Tech stack: JigsawStack, Exa AI, Llama Index, ChromaDB

A personal recommender engine and content feed, powered by RAG, reshaping how we use the web. It analyzes your digital footprint and knowledge repos to build a dynamic user profile, powering a browser extension that suggests articulates the content you're consuming and parses it to your custom feed. Reclaim your web with truly personalized discovery, free from platform recommender algorithms.

Questline.AI - AI powered personalised life path roadmap generator

Tech stack: OpenRouter, Deepseek, Qdrant

AI-driven learning paths, personalized for you. We use Python, Deepseek, and Qdrant to build a digital twin of your knowledge, creating custom roadmaps you can navigate like a Git graph.

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, NLP, 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

Core 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 display output for downstream supervised finetuning efforts

Singapore

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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