

Thomas Liu

AWS Associate Solutions Architect | Full Stack Developer | Data Engineer

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Australian Computer Society (ACS) Member | UNSW Computing Society (CSESoc) Member | AWS User Group Sydney Member

SUMMARY

Versatile full stack developer with expertise in delivering end-to-end solutions across data engineering, web applications, and AI integration. Proven track record in building production systems for electricity data management, automation pipelines, and cloud infrastructure. Strong foundation in both frontend and backend development with hands-on experience in Python, Ruby on Rails, and AWS cloud-native technologies. Passionate about applying emerging innovations to solve real-world challenges while maintaining creative balance through piano and film appreciation.

EXPERIENCE

UNSW — Tutor - COMM5007/INFS2822

Oct 2024 - Present

- Delivered Python programming tutorials achieving high student and faculty satisfaction ratings
- Developed supplementary learning materials and configured coding environments to facilitate student assignment completion and accelerate the learning process
- Resolved internal group conflicts through effective communication with supervisors and stakeholders while maintaining compliance
- Participated in course redesign initiative implementing radical pedagogical changes

Career Break

May 2025 - Sep 2025

- Personal milestone: Got married and supported spouse's relocation to Australia
- Completed AWS Solutions Architect course and obtained certification for professional development

Eutility Pty Ltd — Data Analyst

Apr 2023 - May 2025

- Led all in-house project developments, overseeing complete technical lifecycle from requirements gathering to production deployment
- Developed critical electricity reporting services (daily/monthly/annual) using Python and VBA supporting significant company revenue through ETL pipelines with comprehensive data assurance using a CI/CD Agile methodology. Python handled raw CSV data retrieval and validation while VBA implemented complex business logic for varied electrical site configurations
- Engineered end-to-end real-time solar monitoring portal using Ruby on Rails (self-taught), JavaScript, HTML, and CSS for tracking electricity usage and solar yield. Overcame Windows OS compatibility challenges and prepared application for cloud deployment. Integrated local LLM (Llama 3.2) using ruby-llama.cpp bindings for on-premise AI chat functionality without external API dependencies
- Designed electricity monitoring system to detect unusual consumption spikes or shutdowns using moving average and Multi-Layer Perceptron (MLP) algorithms, automatically alerting clients via email when anomalies are detected
- Created Python automation tools using Selenium for complete pipeline processes including multi-file downloads with structural organization, data validation, and processing—eliminating human error and reducing manual workload
- Maintained and enhanced legacy data pipelines, redesigning in-house functionality including email systems and schedulers to improve business pipeline performance and reliability
- Designed Excel report templates enabling non-technical colleagues to adapt and modify reports for future requirement changes by understanding client needs and creating accessible solutions

Eutility Pty Ltd — Data Analyst (Part-time)

Nov 2018 - Aug 2019

- Engineered robust data pipelines and database structures for critical annual reporting, improving processing efficiency by streamlining workflows
- Designed both pipeline architecture and visualization solutions by understanding stakeholder requirements
- Facilitated cross-functional development of strategic projects, ensuring alignment with business objectives and technical standards

EDUCATION

Tsinghua University Shenzhen International Graduate School

Sep 2019 - Mar 2023

Graduate Studies — Internet & Innovation Design

Focus: AI & Computer Vision - Head Pose Estimation

- 1st Place, Social Innovation Competition 2019
- Scholarship Recipient 2021-2022 (1 of 3 awarded)

University of New South Wales

2015 - 2019

Bachelor's Degree — Commerce/Computer Science (Double Degree)

Santa Clara University

2016 - 2017

Exchange Program — GE3 Exchange Program

PROJECTS

AWS Multi-Tenant Electricity Data Management Platform

Designed and deployed cost-optimized AWS infrastructure using ECS Fargate containerized Python Flask microservices, RDS PostgreSQL with TimescaleDB for high-frequency time-series meter data (48 points per meter daily at 30-minute intervals), Application Load Balancer for multi-AZ high availability, and S3 with CloudFront CDN. Implemented automated daily batch processing pipelines using pandas and scikit-learn for consumption pattern analysis and intelligent anomaly detection alerts. Built server-side rendered visualization interface with customer account pages, tabular and graphical meter readings across multiple sites, with strict row-level security ensuring complete data isolation between clients. Maintained infrastructure costs at \$100-130/month for initial deployment handling 1,000+ page requests daily with auto-scaling.

LT-NET: Self-Attention Mechanism in Head Pose Estimation

Developed novel neural network architecture that infers Yaw/Roll/Pitch angles of head orientation from camera perspective by extracting high-level features from facial landmark maps and single-frame head images using attention mechanisms. Implemented in PyTorch for computer vision applications.

Break Free: Wellness & Habit Control iOS App

Engineered comprehensive behavioral modification application using SwiftUI combining habit tracking, community support forums, and Safari extension to help users overcome addictive impulses and establish healthier routines.

TECHNICAL SKILLS

Languages: Python (5/5), VBA (5/5), JavaScript (4/5), Ruby (3/5), Java (4/5), C/C++ (3/5)

Frontend: HTML5 (5/5), CSS (4/5)

Backend: Flask (5/5), Ruby on Rails (4/5)

Databases: MySQL (4/5), PostgreSQL (4/5), TimescaleDB (4/5)

Data & Visualization: Power BI (5/5), Tableau (4/5)

Cloud/DevOps: AWS (ECS, RDS, S3, CloudFront, ALB), Docker, Git

System: Linux, Unix, Windows

AI (Deep Learning): PyTorch

Methodologies: Agile, CI/CD, ETL, MVC, MVVM

LANGUAGES

English (Native) | **Mandarin** (Native)