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Contents:

> Seeking opportunities to leverage neural networks, LLM, & Gen AI in novel ways to produce meaningful solutions in education, health, mining, or other sectors. Versatile professional with a robust liberal arts background and growing expertise in Deep Learning and AI technologies.

Summary

This resumé attempts to convey the diversity of my skills and my most current achievements and interests.

I was incredibly fortunate to have the privilege to study the great books at St John's College, Annapolis (class of 2022). My liberal arts background informs everything I do and I have found it invaluable in working in AI and Machine Learning technologies. It allows me to look at problems from a completely different perspective from most technical experts in the field.

One of the things that most excites me about recent breakthroughs in AI is how it has given us pause to reflect on the complexity and value of our humanity. Tech companies are investing billions of dollars in an attempt to create computational models that poorly imitate the non-computational way that we *understand* the world, our knowledge systems and practices.

Because the indubituble quality of our uniquely human attributes are poorly defined and understood, they have been somewhat undervalued until now. As AI becomes more and more sophisticated the higher-level thinking skills required by serious philosophical inquiry and the idea that 'the ego' and its thoughts are of central importance to all our endeavours as a species towards benefit.

Qualifications

Graduate Certificate in Data Science, RMIT University *Jan 2024–Apr 2024*

- Achieved GPA: 3.8
- Focused on Machine Learning and Data Analysis in Python & R.

Master of Arts in the Liberal Arts, St John’s College *Aug 2021–May 2023*

- Achieved GPA: 3.950
- Specialization in Ancient Greek and Philosophy.

Honours, First Class in History, University of Western Australia *Feb 2019–Dec 2019*

- Awarded the Philippa Madden Memorial Prize for best honours dissertation on an early modern/medieval topic.

Bachelor of Arts (History and English), University of Western Australia *Feb 2016–Dec 2018*

- Completed courses in object-oriented programming (Java) and Cybersecurity (C, Python, Java, SQL)

Personal Projects (active)

1. **Multi-modal RAG AI CLI 10 Nov 2023 (active)**
   Following the release of the OpenAI API I started a personal project to build a wrapper and context manager around the AI service. Essentially, I implemented a series of libraries analogous to LangChain.
   I used this wrapper to experiment and build tools around the API service. Some early experiments involved multi-step prompting and chain of thought reasoning. Ultimately, I honed in on creating a multi-modal rag tool; quickly accessible via terminal and able to work directly on the file system.
   The user is able to manually build and manage the context using a combination of context files and prompts, this context is tied to a named session allowing the user to work on and save multiple prompt contexts at once. The application is able to parse multiple filetypes and whole directories in a context token efficient manner with high coherence results for formats such as docx and ipynb.
   Recent efforts are focusing on integrating a local model via pytorch to facilitate further experimentation with various model architectures and integrating sound (early fusion).
2. **Course Content Generator**
   I worked extensively with docx in python to produce a markdown to word document generator to enable separation of content and delivery formats. This enabled us to maintain interoperability with existing process while delivering the following benefits:
   - version control content using git.
   - allowed for learning content to be converted to a more token efficient format to enable rag based prompting.
3. **Early Fusion of Sound in Transformer Architecture (Research Project)**
   I am currently working on integrating early fusion sound support into my local models to enable realtime sound processing. The project is inspired by the llama-s Project by homebrewltd (an AI research team based in Singapore) using open-source LLM fine-tuning methods: torchtune.

Leadership in AI

1. **Artificial Intelligence Skill Set**
   For the last year, I have worked on developing an Artificial Intelligence skillset to upskill industry professionals in the use of AI and Deep Learning techniques. We were the first TAFE nationally to deliver ICTSS00120 (the nationally recognised skillset for Artificial Intelligence). I have trained cross-sector cohorts, from health, mining, & academia, in the responsible use, development, training and evaluation of machine learning models using scikit-learn and pytorch.
   We are now partnering with Synergy to upskill their in-house AI and Machine Learning capabilities, delivering the course commercially.
2. **Standalone network and AI Fine-tuning Lab for NMTAFE**
   I have worked closely with the Portfolio Director Maree Tabb to scope and source proposals for a new training network and AI fine-tuning lab to support delivery of future AI courses at NMTAFE. I established partnerships with Hewlett Packard Enterprise (HPE) and DC Alliance (DCA) to provide hardware and data centre services.
3. **Cert IV and Diploma in Data Science and AI**
   I have finalised a curriculum plan and am currently engaged in project managing course development for two new qualifications in AI at Cert IV level and Diploma Level slated for a Semester 1 2025 delivery for Cert IV and Semester 1 2026 delivery for Diploma.

Professional Experience

CEO, VetGrader *Jan 2024–Present*

- **Mission:**
  - VetGrader is a LLM-based tool designed to help Vocational Education and Training students receive feedback on their assessment work. The tool does not complete the assessment for them but rather guides and encourages the student by providing detailed feedback on each question.
  - The goal of vetgrader is to provide a proof-of-concept for the ability of LLMs to conduct reliable evaluation according to a set of standards.
- **Key Achievements:**
  - Applied for Microsoft AI Fast Track program funding and secured upto 150,000 USD in Azure cloud credits.
  - Launched demo website as a streamlit app (vetgrader.com.au)

Lecturer, North Metropolitan TAFE *Aug 2023–Present*

- **Key Responsibilities:**
  - Pioneered the development of a standalone network for the Integrated Technology and Cybersecurity portfolio to support new GPU server infrastructure for AI courses, enabling students to work with transformer models, such as llama3 and openELM.
  - Designed and delivered innovative curriculum plans for two new qualifications in AI and Data Science, successfully attracting a full cohort of students.
  - Developed the ICTSS00120 Artificial Intelligence Skill Set, integrating ethics and discussion-based learning alongside highly technical content teaching students to train their own AI models.

CTO, Urban Peak Hour Technologies *Jan 2023–Present*

- **Key Achievements:**
  - Secured $28,000 in cloud credit funding through the Microsoft FastTrack program, enabling bootstrapping of initial operations and development.
  - Coordinated with the Victorian Department of Planning and Transport on strategy, project requirements, and data security measures for an AI traffic safety proof-of-concept project.
  - Oversaw the production of a minimum viable product and provided on-going technical advice to secure industry partners and further investment.

Machine Learning Engineer (Research Assistant), University of Melbourne (AIMES Laboratory) *Jan 2022–Dec 2022*

- Streamlined deployment processes using Infrastructure as Code (IaC) and Kubernetes, reducing deployment times from one week to 20 minutes.
- Enhanced data wrangling techniques and improved the efficiency of data pipelines through batch processing and asynchronous event-based patterns.
- Increased reliability of automated prediction and training procedures with advanced message queueing patterns.

Software Developer/Solutions Architect, InSig Technologies *Jan 2021–Aug 2021*

- Developed a mining information system for RUC mining (now part of the Redpath Group).
- Engaged in full-stack development, optimizing workflows and system architecture for enhanced performance.

Graduate Software Developer, Risk Management Technologies *Apr 2020–Dec 2020*

- Contributed to the development of WHS risk management software, supporting the team in coding, debugging, and maintenance tasks (Java, Angularjs).
- Assisted in the deployment and optimization of software functionalities for end-users.

Key Skills

- **Technical:** Machine Learning, Data Analysis, Python, Kubernetes, GitOps, Cloud Computing (Azure, AWS), Infrastructure as Code (IaC), Batch Processing, Event-Based Programming.
- **Leadership:** Project Management, Curriculum Development, Cross-functional Collaboration, Strategic Planning.
- **Communication:** Technical Writing, Public Speaking, Stakeholder Engagement, Teaching and Mentorship.
- **Other:** Ethical AI, Inclusive Education Practices, Data Security.

Professional Affiliations

- Member, Australian Computer Society (ACS)
- Member, Future Skills Organisation Technical Committee

Projects and Achievements

- **AI Traffic Safety Project:** Coordinated an AI project for Urban Peakhour with the Victorian Department of Planning and Transport, showcasing applications of machine vision and predictive AI to improve safety at level crossings in downtown Melbourne.

References

Available upon request.
