

# ELLIOTT VERCOE

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## ABOUT ME

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I am a research software engineer and data scientist with a Master's in Information Technology (AI/Data Science) and over 7 years of professional experience. With a strong mathematical foundation and advanced software engineering skills, I specialize in developing and implementing machine learning solutions — particularly in agentic AI — while seamlessly bridging the gap between research and practical, production-ready applications. I excel at collaborative leadership, adapting to fast-paced environments, and delivering client-focused solutions that leverage the latest AI methodologies.

## WORK EXPERIENCE

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### Truestate AI

*Founding Machine Learning Engineer*

**2023-Present**

*Sydney, Australia*

- Built an LLM-powered conversational agentic AI system with tool use, memory, function calling, and vision capabilities. The bot itself became our product.
- Executed the selection, integration, and production deployment of LLMs for fine-tuning, RAG, as well as batch and real-time inference, leveraging advanced GPU-based Kubernetes environments to ensure efficient end-to-end workflows.
- Architected and implemented the backend ML platform using FastAPI microservices on Kubernetes, with hands-on management of CUDA-based GPU environments.
- Oversaw infrastructure on GCP, ensuring scalability and robustness; utilising Terraform and BigQuery.
- Joined as the first employee (post-founder), collaborating closely with leadership on high-level architectural decisions and engaging directly with early B2B clients to refine the product vision.
- **Technologies:** Python, Transformers, Kubernetes, FastAPI, BigQuery, SQL, LLM API endpoints, Docker

### CSIRO Data61 - Information Security and Privacy Research Group

*Research Software Engineer*

**2020-2022**

*Sydney, Australia*

- Contributed to the software implementation of novel research in privacy-preserving ML, including advanced anonymization and re-identification risk assessment tools.
- Collaborated with research scientists to produce deliverables including white papers and prototypes for secure data sharing.
- Developed Differentially Private GANs (PyTorch) and associated Python libraries, supporting real-world client needs for data security.
- **Technologies:** Python, Scala, Apache Spark, MongoDB, Docker, Pytorch

### Performance Based Group - BECODE

*Software Engineer*

**2018-2019**

*Sydney, Australia*

- Built a Django-based web application enabling engineers to streamline and apply standardized fire safety protocols in construction design.
- Coordinated technical project requirements, collaborating with stakeholders to ensure accurate feature implementation.
- **Technologies:** Python, Django, PostgreSQL

## Performance Based Group - PBC

*Fire Safety Design Engineer*

**2017-2018**

*Sydney, Australia*

- Authored technical reports and conducted CFD fire modeling for compliant fire safety design.

## EDUCATION

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### Master of Information Technology (AI/Data Science)

*University of New South Wales (UNSW)*

**2018-2019**

*Sydney, Australia*

- Graduated with Distinction; Overall WAM: 83
- Capstone: Bidirectional Classifying Generative Adversarial Networks – Mark: 92

### Bachelor of Mechanical Engineering

*University of New South Wales (UNSW)*

**2013-2016**

*Sydney, Australia*

- Graduated with Distinction; Overall WAM: 84

## TECHNICAL SKILLS

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**Machine Learning:** Python (Pandas, NumPy, Matplotlib, Pytorch, Scikit-learn), Hugging Face Transformers, Scala, Apache Spark, XGBoost, LLM APIs

**Backend Development:** Python (Django, FastAPI), SQL, MongoDB, RESTful design, Git

**Infrastructure:** Kubernetes, Google Cloud Platform (GCP), AWS, Docker, Linux (Ubuntu), Terraform

**Frontend Development:** HTML, CSS, JavaScript, React, Next.js

## RESEARCH

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- **Time Series Synthesis with Differentially Private GANs**, Ming Ding, Elliott Vercoe, David Smith, Thierry Rakotoarivelo, Djazia Ladjal, 2022. Delivered to client.
- **Privacy-Preserving Power Flow Data Release**, David Smith, Frederik Geth, Elliott Vercoe, Andrew Feutrill, Ming Ding, Jonathan Chan, James Foster, Thierry Rakotoarivelo, 2021. arXiv:2103.14036
- **Multi-Resolution Differentially-Private Data Model**, Farhad Farokhi, Thierry Rakotoarivelo, Ming Ding, Paul Tyler, Elliott Vercoe, 2020. Data.gov.au
- **BiCGAN: Bidirectional Classifying GANs**, 2019. Master's Project. Projects Page

## OTHER ACTIVITIES

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### UNSW Outdoors Club Trip Leader

**2016-Present**

- Teach climbing, canyoning, and hiking skills; lead and manage trips, ensuring participant safety and engagement.

### Remote Area First Aid Training

**2021/2025**

- Completed advanced first aid training for remote locations, further emphasizing crisis management and leadership skills.