Stephen James Krol

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PROFESSIONAL EXPERIENCE

Research Fellow Dec 2025 – Present
SensiLab, Monash University

- Training machine learning models to assist architects in the design and fabrication of tectonics.
- Built an evolutionary system with a Vision-Language Model (VLM) to automatically rank the aesthetics of generated designs.
- Currently working with and planning to train multimodal 3D models that generate outputs that can be feasibly fabricated using additive manufacturing.

AI Engineer (Contract) Aug 2023 – Nov 2023
University New South Wales (UNSW)

- Hired as part of the team that built an AI soundscape to celebrate the 50th anniversary of the Sydney opera house which was live streamed for 744 hours.
- Led the generation of AI sounds utilising DDSP and MusicGen to create unique timbres.

Machine Learning Engineer Dec 2018 – May 2022
Unico Computer Systems

- Trained deep learning models in PyTorch, working with CNNs and transformer-based architectures building early-product prototypes.
- Successfully used contrastive learning to build a horse facial recognition prototype, winning a future contract for the team.
- Led a small team to successfully develop a real-time object tracking system for the NVIDIA Jetson.

Research Assistant (Contract) Jan 2020 – Feb 2020
University of Warwick

- Developed the first version of DiAGRAM with the National Archive of the United Kingdom.
- DiAGRAM is a Bayesian support tool, running in R and now regularly used by archivists to estimate risk when making archival decisions.
- Ran co-design workshops with members of the National Archive, effectively utilising their expertise to build an initial product.

EDUCATION

Monash University, Melbourne Australia May 2022 – 2025
Doctor of Philosophy (PhD), Artificial Intelligence

- Situated between the fields of machine learning and human-computer interaction, with a focus on designing and building AI systems to assist musicians in composition.
- Designed and developed various generative AI systems using Transformers, Variational Autoencoders and Diffusion Models.
- First author publication in the ACM Conference on Human Factors in Computing Systems (CHI), a competitive A* conference, winning an honourable mention recognition.

Monash University, Melbourne Australia July 2020 – June 2021
Bachelor of Computer Science (Honours), GPA 3.625, WAM 87.25

- Graduated with first class honours.
- Built a generative AI system to create musical soundscapes from visual art to improve accessibility for people with blindness and low vision.

Monash University, Melbourne Australia Feb 2016 – June 2020
Bachelor of Computer Science/Bachelor of Commerce GPA 3.625, WAM 81.34

PROJECTS & EXTRACURRICULAR

Research Through Design Agent Current

- Building an RTD agent for SensiLab to handle the storage and development of research ideas.
- Working with Claude agents and local LLM agents.

AWARDS & RECOGNITIONS

Honorable Recognition Best Paper Award CHI2025
The Honorable Recognition Award at CHI I recognises the top 5% of submissions, selected for their outstanding contribution and scholarly excellence.

Monash Graduate Excellence Scholarship
Monash Graduate Excellence Scholarships (MGES) are provided by Monash University to the top-ranked domestic students commencing Research Doctorate and Research Master's degrees

RELEVANT PUBLICATIONS

Supporting Creative Ownership through Deep Learning-Based Music Variation *Authors:* **Stephen James Krol**, Maria Teresa Llano, Jon McCormack *Venue: Advances in Neural Information Processing Systems (NeurIPS 25 Creative AI)*

Exploring the Needs of Practising Musicians in Co-Creative AI Through Co-Design *Authors:* **Stephen James Krol,** Maria Teresa Llano Rodriguez, Miguel J. Loor Paredes *Venue: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, pp. 1–13.

From Simple to Complex: Extending the Generative Capabilities of Attribute-Based Latent Space Regularization through AR-VAE-Diffusion *Authors:* **Stephen James Krol**, Abhinav Sood, Maria Teresa Llano *Venue: CREAI alongside ECAI 2024.*

SKILLS

Programming languages: Python, R, Javascript, C++, HTML, CSS

Computer software/ frameworks: PyTorch, TensorFlow, Keras, Transformers, Diffusers, OpenCV, Scikit Learn, XGBoost, Tidyverse, Nvivo, AWS, Azure, Microsoft Office, Linux, Conda, Git, Pandas, Docker, OpenAI API

Languages: English (Fluent), Italian (B1 Level)

REFERENCES

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