

- Education**     *Doctor of Philosophy (Science)*, 2012–2018  
Monash University, Australia,  
Developing a best in class solver for nonlinear boundary value problems and gradient-free optimisation techniques. These approaches were employed to explore open problems from atmospheric wave dynamics.
- Bachelor of Aerospace Engineering & B. of Science*, 2007–2015
- Bachelor of Science (Honours, Grade 1)*, 2011
- Experience**     *Postdoctoral Research Fellow (Computing and Information Systems)* 2021–  
*Current (0.5 FTE)*  
Adversarial behaviours and Certified Guarantees on NGTF AMLC
- Project leader on a \$450,000 research grant covering defences against adversarial attacks in settings outside image-based systems. Separately also the research lead on another project covering novel certification mechanisms for Deep Learning image-based classifiers.
  - Developing new research, as well as tools and techniques, to help both understand the risks that deployed machine learning systems face, and to defend against said risks.
  - Collaborating with researchers from DST Group, CSIRO, Swinburne, and the University of Melbourne, as well as supervising multiple students.
- Postdoctoral Research Fellow (Electrical Engineering)* 2019–*Current (0.5 FTE)*  
Computational Game Theory, Dynamical Systems, and Machine Learning on DST Group contract
- Working closely with DST group, including multiple presentations within Defence research conferences, resulting in 1 accepted publication with additional works under preparation.
  - Preparing documentation to satisfy funding milestones, and producing research plans to justify future funding.
  - Hiring, training, and supervising 3 masters students as research assistants.
  - Developments from this work are also being applied to a new project on automated software testing.
- DAAD Ai-Net Fellow* 2023 Selected as a DAAD Ai-Net fellow to hold discussions with German researchers regarding the potential for collaboration on projects relating to Artificial Intelligence and Machine Learning.
- Industry-focused Research Fellow (Electrical Engineering)* 2019–2021 (1.0 FTE)  
Signals Propagation, Graph Theory, and Temporal Predictions with Trusted Autonomous Systems DCRC
- Lead primary investigator on contract between Consunet (SME), DST Group, RMIT, University of Sydney and the University of Melbourne.
  - Delivering 14 technical reports, IP and code transfer, and dozens of internal technical presentations.

- Hiring, training, and mentoring 2 undergraduate research assistants.

*Academic Supervisor*

2019–Current

- Co-supervising 5 PhD students, providing mentorship and academic support.
- Lecturing for multiple subjects, with both lecturing and course design for a new Security Analytics Masters level subject.

*Victorian GPGPU Symposium*

2021

Organised in support of a future ARC LIEF grant

- Member of the organising committee, and responsible for approaching, recruiting, and being the lead point of contact for multiple speakers.
- Conference had over 150 registered attendees, drawing both speakers and audience members from local, and international institutions & industry.

*High Performance Computing Consulting*

2019–Current

- Providing consulting support for researchers looking to use HPC computing infrastructure, with particular emphasis on GPU accelerated, multi-GPU, and multi-node configurations.
- Designing, ordering, installing, maintaining, and administering a research computing system for 10 users, while ensuring 24/7 uptime.
- Volunteered to provide technical leadership to Camberwell High School (2021).
- Participating in NCI training sessions.

*Monash University*

2010 - 2019

Teaching Assistant

- Teaching engineering mathematics (1st and 2nd year), fluid dynamics and chaotic systems (3rd year), and developing teaching materials. 96.15% approval/strong approval in blind student surveys.
- Mentoring and tutoring Indigenous students in the Indigenous Enabling Program and the Indigenous Non-Award Pathway.

*Self-Employed Mathematician and Data Scientist*

2012–2019

- Successfully modelling and trading fixed-price financial instruments.
- Helping an ASX listed company identify millions of dollars (per quarter) in unaccounted for chargebacks.
- Designing and testing a live bid-ranking algorithm for a large online tech company with hundreds of thousands of daily users.
- Implementing a design optimisation framework for a multinational naval engineering firm.
- Providing technical consultation and software to several sporting leagues, to help assist in both ensuring equity and solving scheduling problems.

**Publications  
(Accepted)**

Cullen, A.C., Rubinstein, B.I.P, Kandeepan, S., Flower, B., Leong, P.H.W., “Predicting Dynamic Spectrum Allocation: A Review covering Simulation, Modeling, and Prediction”. *Artificial Intelligence Reviews (Awaiting Publication)*, 2023.

Liu, S., Cullen, A.C., Montague, P., Erfani, S., Rubinstein, B.I.P., “Differentially Private Pointwise Certification Against General Poisoning Attacks”. *37th AAAI Conference on Artificial Intelligence*, 2023.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., “Robust Wireless Network Anomaly Detection with Collaborative Adversarial Autoencoders”. *IEEE International Conference on Communications (ICC)*, 2023.

Sun, G., Alpcan, T., Camtepe, S., Cullen, A.C., Rubinstein, I.P., “An Adversarial Strategic Game for Machine Learning as a Service using System Features”. *AAMAS*, 2023.

Cullen, A.C., Montague, P., Liu, S., Erfani, S., Rubinstein, B.I.P., “Double Bubble, Toil and Trouble: Enhancing Certified Robustness through Transitivity”. *Advances in Neural Information Processing Systems (NEURIPS)*, 2022.

Cullen, A.C., Alpcan, T., Kalloniatis, A.K., “Adversarial Decisions on Complex Dynamical Systems using Game Theory”. *Physica A*, 2022.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., Kopacz, J., “Wireless Network Simulation to Create Machine Learning Benchmark Data”. *GLOBECOM*, 2022.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., “Generative Adversarial Networks for Anomaly Detection on Decentralised Data”. *Annual Reviews in Control*, 2021.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., Kopacz, J., “Privacy-Preserving Collaborative SDR Networks for Anomaly Detection”. *IEEE International Conference on Communications*, 2021.

Saeed, I., Cullen, A.C., Erfani, S., Alpcan, T., “Domain-Aware Multiagent Reinforcement Learning in Navigation”. *International Joint Conference on Neural Networks*, 2021.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., Kopacz, J., “Distributed Generative Adversarial Networks for Anomaly Detection”. *International Conference on Decision and Game Theory for Security*, 2020.

Cullen, A.C., Clarke, S.R., “A Fast, Spectrally Accurate Homotopy Based Numerical method for Solving Nonlinear Differential Equations”. *Journal of Computational Physics*, 2019.

Cullen, A.C., “A Novel Numerical Solver for Nonlinear Boundary Value Problems, with Applications to the Forced Gardner Equation”. *Phd Thesis: Monash University*, 2018.

Cullen, A.C., Clarke, S.R., “A Fast, Spectrally Accurate Solver for the Falkner–Skan Equation”. *ANZIAM Journal* 58, 2016.

**Publications  
(Under  
Review)**

Cullen, A.C., Montague, P., Liu, S., Erfani, S., Rubinstein, B.I.P., “Exploiting Certified Defences to Attack Randomised Smoothing”. *Neurips*, 2023.

Cullen, A.C., Montague, P., Liu, S., Erfani, S., Rubinstein, B.I.P., “It’s Simplex! Disaggregating Measures to Improve Certified Robustness”. *IEEE Security & Privacy*, 2023.

Chan, K.C.H., Cullen, A.C., Clarke, S.R., “Exponential and Algebraic Decaying Solitary Waves and their connection to Hydraulic Fall Solutions”. *Special issue of the journal Wave Motion on Nonlinear Waves*, 2023.

Saeed, I., Cullen, A.C., Erfani, S., and Alpcan, T., “Efficient Environment-Aware Multiagent Reinforcement Learning with Guarantees”. *IEEE Transactions on*

*Neural Networks and Learning Systems*, 2023.

Katzef, M., Cullen, A.C., Alpcan, T., Leckie, C., Kopacz, J., “Failure-tolerant Distributed Learning for Anomaly Detection in Wireless Networks”. *TMLCN*, 2023.