Daniel Braun

Sydney, Australia
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Experience

AI Safety Camp — Online
Participant/Research Engineer - Part time — Jan 2021–Present

- Working on interpreting the neural mechanisms of behaviour in reinforcement learning agents. (Paper in progress.)
- Responsibilities: creating interactive visualisations (JavaScript+D3); helping with experimental design and implementation (Python+PyTorch); helping guide the research direction.

Machine Learning Alignment Bootcamp - Redwood Research — United States
Participant — Jan 2022

- Studied and implemented state-of-the-art machine learning models, with a particular focus on (large) language models.

NukkAI — France
Research Engineer — Jun 2019–Jan 2021

- Research and application of symbolic AI methods (in particular, Inductive Logic Programming) in the game of Bridge.
- Lead developer of NuTrain: a Bridge training tool built using a microservice architecture with Python APIs and a Vue.js frontend. (See video tutorial.)
- Developed a tool which combines logical deduction and tree search to produce automated commentary for Bridge card play.

TCCS — Australia
Data Scientist/Machine Learning Engineer — Feb 2017–Jun 2019

- Co-founded the group and developed several successful predictive sports models, some of which are still profitably deployed today.
- Led a small team in creating and managing databases, data scrapers, and other software tools and libraries to support model development and production.

Self-Employed — Australia
Card Player — 2009–2016

- Poker: Professional online and live play.
- Bridge: Represented NSW and Australia on various junior teams (Under 21 and Under 26). Best results; 1st - U21 Asia Pacific Championships 2011, 9th - U26 World Championships 2016.

Education

University of Sydney — Australia
B.S. Advanced Studies (Honours) (Computer Science) — Mar 2021–Dec 2021

- Graduated with Honours Class I and The University Medal (WAM: 92.5).
- Thesis on Reinforcement Learning with Linear Temporal Logic objectives [1].
- 1^{st}/405 students: COMP5046 (NLP). 2^{nd}/294 students: COMP5329 (DL).

University of Wollongong Australia
B.S. Mathematics (Advanced) 2011–2013

- Graduated with Distinction (WAM: 80).
- Spring 2013 Project: Generalising the Zappa-Szép Product. Mark: 88.
- Aut 2013 Project: Bounded Operators in Normed Vector Spaces. Mark: 91.

Research Papers

[1] **D. Braun**, "Getting to school on time: Completing linear temporal logic objectives before a fixed deadline with reinforcement learning", Honours Thesis, https://danbraunai.github.io/files/thesis.pdf, 2021.

[2] V. Ventos, **D. Braun**, C. Deheeger, *et al.*, "Construction and Elicitation of a Black Box Model in the Game of Bridge", To appear in Advances in Knowledge Discovery and Management, Springer, 2020. arXiv: 2005.01633 `[cs.AI]`.

Skills

- Python (PyTorch, Huggingface, Pandas, Numpy, Matplotlib), JavaScript (Vue.js, D3, jQuery), HTML/CSS, SQL, Prolog, Git, Gitlab CI/CD, Docker.
- Theoretical knowledge and applied experience in a wide range of AI sub-areas including Deep Learning, Reinforcement Learning, Inductive Logic Programming, Temporal Logic.
- English (native), French (basic conversational).

Referees

Available on request.