ROMAN BELAIRE

Ph.D. Candidate - Computer Science

📍 Singapore ✉ romanbelaire@gmail.com ↖ romanbelaire.com in /romanbelaire ⌂ /romanbelaire

Research Interests: Reinforcement Learning, Robust Reinforcement Learning, Adversarial Robustness, AI Safety and Alignment, LLM Red-Teaming.

EDUCATION

Singapore Management University

Ph.D. in Computer Science

📅 June 2025 (earliest)

- *Regret-based Defense in Adversarial Reinforcement Learning* - AAMAS 2024 (Full Paper)

California State University, Fullerton

Bachelors of Science in Computer Science

📅 May 2020

- *Machine Learning Techniques for Brainwave Classification* - Undergraduate Research Exhibition 2019 (Poster)
- *One-Shot Time Series Forecasting with Siamese Neural Networks* - Supervised Research Project

PUBLICATIONS

Regret-based Defense in Adversarial Reinforcement Learning, **Roman Belaire**, *Pradeep Varakantham, Thanh Nguyen and David Lo. arxiv.org/abs/2302.06912 - AAMAS 2024 (Full Paper)*

RESEARCH EXPERIENCE

Graduate Researcher (Ph.D.)

Singapore Management University

📅 2021-Present 📍 Singapore

- Conduct Ph.D. research on safe, robust, and explainable reinforcement learning (RL) and large language models (LLMs), meeting grant requirements for AI Singapore (AISG).
- Independently manage research schedule, including writing and maintaining the project code base and paper writing, to produce high-quality publications at Tier 1 venues.
- Propose and execute research questions, including literature review, development of theoretical proofs, and implementation of machine learning models, to meet dissertation research goals.
- Provide weekly progress reports and self-guidance to co-authors and project advisors, to maintain a focused and productive research schedule.

Undergraduate Researcher

California State University, Fullerton

📅 2019 📍 Fullerton, California

- Applied existing machine learning models to classify EEG brain signals and predict brain activity patterns with >90% accuracy.
- Headed a team of 4 undergraduates on machine learning for time series analysis of brainwave signals, to facilitate group learning.
- Provided weekly updates to faculty supervisor and graduate research lead on literature review, implementation, and experiment status.

ENGINEERING EXPERIENCE

Quantitative Research Consultant (BRAIN)

WorldQuant

📅 2023-2024 📍 Singapore

- Contributed quality alphas using WorldQuant's BRAIN platform, for normal deployment as well as themed competitions.
- Self-educated using WorldQuant's quantitative finance courses, supplemented with audited courses at SMU.
- Participating in the WorldQuant Guild program, building automated pipelines for alpha research using the BRAIN API.

Associate Software Engineer

Toshiba America Business Solutions

📅 2021   📍 Lake Forest, California

- Developed web application features using C#, Javascript, and HTML/CSS, which were deployed to Azure Cloud Services for development, testing, and production.
- Held weekly rotating ownership of nightly test builds.
- Regulated workflow with standard engineering protocols, such as daily stand-up, code reviews, and sprint reviews.

Software Engineer Intern

Collins Aerospace

📅 Summer 2019   📍 Cedar Rapids, Iowa

- Streamlined internal testing and field maintenance of Collins's radio technologies by working with a team of SW Engineers and one intern to develop a platform-independent configuration tool.
- Developed a full-stack graphical system and multi-threaded network interface, for the testing and maintenance of deployed communications systems.
- Tested program functionality continuously on a network of Raspberry Pi's, to emulate active networking products.

AI Curriculum Researcher/Developer

Bytes & Bots Labs

📅 2018-2019   📍 Irvine, California

- Self-started a new 6-month learning module on Artificial Intelligence for extracurricular learning.
- Planned, created, and instructed learning modules, including the project code base, technical documentation, and pedagogical guidance.

LANGUAGES AND TOOLS

C++, Python, C#, Pytorch, Git/SVN, LLMs, GPT
Linux, LaTeX, Docker

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