Leo McKee-Reid

ML Researcher/Engineer

Leo.tzu.mr@gmail.com
1-250-889-9456
Victoria, B.C., Canada

PROFESSIONAL SUMMARY

Passionate AI research scientist/engineer leveraging my machine learning skillset to guide the development of safe and trustworthy AI. I am results-oriented and curiosity-driven with a diverse set of experiences in ML, AI safety research and field building, computational neuroscience, and aerospace engineering.

EDUCATION

BSc in Computer Science and Mathematics (Internship Distinction) – University of Victoria (2018 – Dec 2023)
- Strategic Framework Experiential Learning Award for computational neuroscience internship.
- Honors status up until final term (dropped out of honors as I wanted to focus more on my AI club projects)

Mechanical Engineering Technologist Diploma (Internship Distinction) – Camosun College (2014 - 2016)
High School Diploma (Academic Honors) – Victoria High School (2008 - 2012)

WORK EXPERIENCE

AI Safety Researcher – AI Safety Camp (Jan – April 2024)
- Worked on two AI Safety Camp projects: "*Out-of-context learning interpretability*" and "*How promising is automating alignment research*?".
- Acted as team coordinator in addition to researcher.

Deep Learning Intern – Tremblay Lab, University of Victoria (Sept 2021 – Sept 2022)
- Built convolutional neural networks with PyTorch to do cell identification and segmentation analysis on volumes of mouse brain image data (from bright-field and electron microscopes).
- Interdisciplinary research with physicists, biologists, and neuroscientists.

AI Safety Researcher – AI Safety Camp (Jan 2022 – June 2022)
- Explored technical solutions to problems surrounding AI deception and human dogmatism within training datasets on a team of aspiring and professional AI safety researchers.

Computational Neuroscience Intern – Salk Institute for Biological Studies (Sept 2019 – April 2020)
- Collaborated on a state-of-the-art neuron and synapse simulation software called MCell at the Computational Neurobiology Lab.
- Interdisciplinary research with physicists, biologists, neuroscientists, and mathematicians.
- Programmed in Python, C, C++, and BioNetGen (a custom language for modeling biochemical reactions).

Production Design Engineer – Rocket Lab (Feb 2017 – Feb 2018)
- Worked in a cutting-edge, face-paced environment with aerospace engineers, machinists, and world class composite technicians to build the world's first orbital rocket with electric-powered turbopumps, 100% carbon fiber fuel tanks, and fully 3D printed engines.
- Designed, procured, and managed the construction of jigs, fixtures, composite molds, large shop structures and composite flight components (notably designed the first system for supporting the entire rocket).
- Coordinated projects to increase build repeatability and decrease manufacturing time and cost of the rocket.

Composite Builder – Rocket Lab (Jan – Feb 2017)
- Conducted research and development with carbon fiber and fiberglass structures.
- Manufactured composite molds and flight components.

Aircraft Design Engineer– Nebula UAS (July – Dec 2016)
- Designed and manufactured complex unmanned aerial vehicles (UAVs) and rapid prototyping.

Team Lead – Center for Aerospace Research (March – Sept 2016)
- Led a team in the design, construction and testing of a custom, high-performance dynamometer.

Jr. Mechanical Engineer – LineSpect (July – Sept 2015)
- Conducted research, construction, and testing of composite airframe manufacturing techniques for autonomous drones.
- Calibration of electronics for flight (ECS, accelerometer, GPS, transmitter, and compass).

ADDITIONAL PROJECTS & EXPERIENCE

AI Alignment Hackathon Participant – Code Red Hackathon, Hosted by METR (March 2024)
- Awarded over $1000 for new ideas and implementing LLM evaluation methods.

AI Club President & Founder – UVic AI, University of Victoria (June 2022 – Dec 2023)
- Hosted technical ML workshops, an AI safety reading group, large hackathons, programming competitions, a public AI safety conference, and led ML projects for the student AI club (uvicai.ca).
- Taught semester-long courses on PyTorch and TensorFlow to fellow undergrads.
- Led a large team of students and gave over 15 workshops and presentations on machine learning and AI safety.
- Raised $11,000 in 2023 for AI and AI safety competitions, conferences, and events.

AlphaZero-like RL Project – UVic AI (Feb – May 2023)
- Led a team that built the first RL model that could play the popular competitive programming game Battlesnake that consistently placed in the top 30 leaderboard during online tournaments.
- Developed a novel modified Monte Carlo tree search algorithm for self-play with a CNN architecture for the 4-player simultaneous move game. Code is currently private as it's continuing to improve for future competitions.
- Won the Most Innovative Project Award at Canada's largest undergrad AI conference (CUCAI).

AI Event Coordinator – Canadian Undergraduate Conference on AI (Nov 2022 – Mar 2023)
- Helped organize sponsors, industry speakers, and presentations at the largest Canadian undergraduate AI conference (350 attendees from 8 different universities) (CUCAI.ca).

Writer/Editor – Martlet Newspaper (Sept 2018 – Aug 2019)
- Conducted interviews, wrote articles, and copy edited for the University of Victoria news organization.

Robotics Club Computer Vision Specialist – UVic Robotics, Student engineering team (Oct 2018 – May 2019)
- Worked on both the Software and Science team in developing an autonomous, Curiosity-like Mars rover to collect and analyze soil samples in the 2019 Canadian International Rover Challenge.

Rocketry Club Team Lead – UVic Rocketry, Student engineering team (Sept 2015 – Jan 2017)
- Led a team of students in the design and manufacturing of 9 and 12ft carbon fiber rockets.
- Won 3rd place out of 44 rocketry teams from universities around the world in the Intercollegiate Rocket Engineering Competition (IREC 2016) in Utah (successfully launched to 10,000 ft, conducted a biological experiment at apogee, and landed without structural damage).

UAV Club Member – UVic AERO, Student engineering team (Sept 2014 – Sept 2016)
- Mechanical engineering member of the design, build, fly UAV/drone club.

PUBLICATIONS

- **Leo M. R.**, Finn A., Nathan W., Eric S., Dana B. Monte Carlo Tree Search and Reinforcement Learning for a Four Player, Simultaneous Move Game. (2023, CUCAI).
  - In addition, this conference paper and project won the Most Innovative Project award at CUCAI.
- Mohammadparsa K., Fernando G. I., Maude B., Katherine P., **Leo M. R.**, Ben-Azu B., Laura M., Marie-Ève T. Manual versus automatic analysis of microglial density and distribution: a comparison in the hippocampus of healthy and lipopolysaccharide-challenged mature male mice. (2022, Micron).

LANGUAGES AND SOFTWARE

Programming Languages and Libraries
- Python (6 years)
- PyTorch (2 years + hosted multiple PT workshops teaching undergrads)
- TensorFlow (1 year + hosted multiple TF workshops teaching undergrads)
- C (5 years)
- C++ (4 years)

Software Tools and Programs
- Blender and CellBlender (computational neuroscience visualization)
- GIMP (writing python scripts for preprocessing image data)
- ImageJ, Ilastik, VAST (neurological imaging visualization and data processing)
- Solidworks, Fusion360, AutoCAD (computer automated design for aerospace engineering)