



MALHAR BARBHAYA

☎ (780) 381-5626 ✉ barbhaya@ualberta.ca  [LinkedIn](#)  [GitHub](#)

About Me

I am a dynamic second-year undergraduate student pursuing a Bachelor of Science in Computer Science at the University of Alberta. With a successful track record in hackathon, I bring hands-on experience in process control, reinforcement learning, and AI showcasing my ability to translate theoretical knowledge into impactful solutions.

Education

University of Alberta

Bachelor of Science in Computer Science

September 2022-present

Edmonton, AB

Experience

Process Control Lab Assistant

January 2024- April 2024

University Of Alberta

Edmonton, Alberta

- Developed a Python-based Reinforcement Learning (Reinforcement Learning) model for automating a Fluid Mechatronics machine, achieving seamless control over parameters such as water flow speed, inlet/outlet pressures, flow rate, and RPM.
- Designed and implemented an intuitive user interface using DASH for real-time data visualization, enabling the manager to monitor and control machine operations efficiently.
- Enhanced the RL model to autonomously operate the entire system, optimizing performance and providing valuable insights for further reference.
- Currently leading efforts to transition the Reinforcement Learning system into a multi-modal framework. This involves creating a supervisor model to intelligently select Reinforcement Learning agents based on specific variables and implementing a fault detection system for cyber-attack mitigation.
- Proactively engaged in a four-month internship, demonstrating adaptability and learning agility while mastering diverse programming paradigms and cutting-edge technologies.


Achievement

Won DevelopEd 2.0 HACKATHON

September 2023

Secured 2nd place in the first hackathon in Tinker's category

Edmonton, Alberta

- Created project Scheduler ( [GitHub](#)) which is a dynamic and responsive schedule-maker.
- Awarded an exclusive opportunity to participate in a Software Development Job Shadow at PLACE as a direct result of winning the hackathon. During this experience, I expanded my technical proficiency by exploring various programming languages, tools, and industry-leading services

Projects

Scheduler | *Python, Flask, HTML, CSS, JS* | [GitHub](#)

September 2023

- Developed a dynamic and responsive schedule-maker web application.
- Used Python for scripting and back-end algorithm, Flask to connect the back-end with the front-end, and HTML/CSS/JS for front-end webpages.
- Hosted the website on Zeet and Google Cloud Platform.

Neural Network-based Pong AI using NEAT | *Pygame, Python, AI* | [GitHub](#)

July 2023

- Developed a dynamic Pong game using the pygame library. Integrated the NEAT algorithm, designed for evolving neural network architectures and parameters, enabling AI models to adapt and improve over time.
- Designed the AI to play against either other AI opponents or human players
- Utilized pygame to provide real-time visualization of AI interactions and player scores during gameplay.

Skills

- **Programming Languages & Technologies:** Python, Flask, C++, C, Java, HTML/CSS/JS, Pygame, LaTeX
- **Tools & Frameworks:** Reinforcement Learning, DASH, NEAT, Git
- **Software & Libraries:** Pandas, NumPy, Matplotlib, TensorFlow, MongoDB, SQL
- **Miscellaneous:** Process Control, Machine Learning, Artificial Intelligence, Web Development

Certifications

- Machine Learning Specialization (Certificate)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization (Certificate)
- Neural Networks and Deep Learning (Certificate)