Rik Mukherji

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EDUCATION

University of Alberta   Edmonton, AB, Canada
Bachelor of Science (B.Sc.) in Computer Science (Software Practice)   *Aug 2022 – May 2026 (Expected)*
- Relevant Coursework: Software Engineering, Machine Learning, Reinforcement Learning

EXPERIENCE

Competitive Programming Competition — Member   Mar 2023 – Present
University of Alberta   *Edmonton, AB*
- Secured 7th place in a university-level programming contest, refining skills in data structures, algorithms, and problem-solving under strict time constraints.
- Collaborated effectively with teammates to implement optimized solutions in languages such as C++ and Python, demonstrating adaptability and efficient debugging.

natHACKS Neurotech Hackathon (NeurAlbertaTech)   Nov 2023
Participant   *Edmonton, AB*
- Co-developed **NeuralLlama**, an AI-driven music recommendation tool integrating Muse 2 EEG data and a PyTorch-based model to generate personalized tracks.
- Built **NeuroDrive**, an EEG-controlled racing game in Unity and C#, translating brainwave signals into in-game actions for an immersive neurogaming experience.
- Collaborated with a team of four to prototype end-to-end solutions in under 64 hours, applying signal processing, machine learning, and real-time data handling.
- Presented project outcomes to judges, showcasing effective communication of complex technical concepts and demonstrating impactful teamwork.

PROJECTS

NeuralLlama — Generative AI, Music Recommendation, EEG Signals
- Developed a system that analyzes real-time brainwave data from a Muse 2 headset to recommend or synthesize music via a neural network.
- Utilized Python, PyTorch, and signal-processing techniques to filter EEG noise and enhance user-specific recommendations.

LuckyYou — Java, Android Studio, Firebase, Google Maps
- Built an Android app that randomly selects event attendees, moving beyond first-come-first-serve signups. Integrated Firestore for real-time data and Google Maps API for location-based features.
- Practiced Agile methodologies with frequent stand-ups, sprint planning, and Jira ticket management to ensure timely, high-quality releases.

NeuroDrive — Unity, C#, Muse 2, EEG-based Controls
- Created a racing game that maps EEG signals to acceleration and steering mechanics, demonstrating the potential of BCI (Brain-Computer Interface) in gaming.
- Processed raw sensor data (alpha/beta waves) using Fourier transforms to detect focus levels, achieving near real-time performance.

Personal Website — HTML, CSS, JavaScript
- Designed and deployed a responsive portfolio site to showcase projects and blog posts, emphasizing strong front-end development practices.
- Leveraged GitHub Pages for continuous deployment, improving version control and simplifying maintenance.

SKILLS

- **Languages:** Python, Java, C++, JavaScript, C#, SQL
- **Tools & Frameworks:** Android Studio, Firebase, PyTorch, TensorFlow, Git, Linux
- **Libraries:** NumPy, Pandas, Matplotlib, BrainFlow
- **Methodologies:** Agile (Scrum), Object-Oriented Design, Test-Driven Development