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To The Selection Committee
Aalto Science Institute International Summer Research Programme
Aalto University, Finland

Subject: Application for AScI International Summer Research Programme 2026

Dear Selection Committee,

I am applying to the AScI International Summer Research Programme 2026 because I see it as a unique opportunity to contribute to **Project 4207 (Probabilistic Machine Learning and Generative AI)** and **Project 4205 (Bayesian Physician)**. As a computer science student with a growing interest in AI and scientific computing, I am deeply motivated by the chance to learn directly from the researchers at Aalto University who operate at the intersection of generative modeling, healthcare, and uncertainty quantification. My academic journey has consistently been driven by curiosity and a desire to understand how complex technical systems function in real-world, high-impact settings.

During my sixth semester at Tribhuvan University, where I currently hold a CGPA of 3.77, I participated in an academic research collaboration with Bhadrapur Municipality. This project exposed me to the challenges of working with large, unstructured administrative datasets and taught me how theoretical concepts translate into practical systems. I learned how to clean and preprocess real-world data and apply machine learning algorithms like regression and clustering to identify trends and service bottlenecks affecting a population of over 70,000. More importantly, this experience helped me understand the importance of data quality, interpretability, and scalability, lessons I am eager to deepen in a research environment focused on probabilistic modeling.

I have spent the last year refining my skills in modern AI architectures. As an intern at Huncha Digital, I engineered a LangGraph React Agent capable of handling autonomous workflows, which successfully resolved over 100 daily user queries with 93% accuracy. I enjoyed the challenge of integrating multi-modal inputs (voice and text) and optimizing backend logic to ensure the system was robust enough for production. Outside of work, I challenged myself to build "Cogni-chat," a RAG system utilizing FAISS vector stores and deployed on Hugging Face Spaces that allows users to converse with their complex technical documents. I am eager to apply these generative AI techniques to the advanced machine learning challenges at Aalto.

I believe my specific technical skillset aligns perfectly with the needs of Projects 4207 and 4205. In addition to my expertise in Python, I possess a strong foundation in scientific computing languages such as Julia and C++. I recently completed the Brown University AI Winter School, where I received specialized training in Scientific Machine Learning (SciML) and Physics-Informed Neural Networks (PINNs). I see the Summer Research Programme as an opportunity to strengthen these skills by learning how they are applied in probabilistic contexts. I am particularly fascinated by the potential of applying Generative AI to diagnostic systems—similar to my work on an AI-Powered Skincare Diagnostic System—while leveraging probabilistic methods to improve decision-making in healthcare.

For me, the AScI International Summer Research Programme represents a critical learning step between my background in software engineering and my long-term goal of pursuing graduate studies in machine learning. I chose Aalto specifically because I want to challenge my skills in C++, Julia, and deep learning against research problems in Bayesian inference and generative AI that simply don't exist elsewhere. I am motivated to absorb as much as possible from the collaborative work and to develop the research discipline and technical rigor required for scientific computing.

Thank you for considering my application. I would be honored to have the opportunity to learn and grow as part of the AScI International Summer Research Programme.

Sincerely,

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