Dear Shunta Arai-sensei,

I hope this message finds you well. My name is Krish Bakshi, and I am writing to express my sincere interest in contributing to the cutting-edge research at your laboratory and applying to the master’s program at Tokyo Institute of Technology for the September 2025 intake. Your pioneering work in statistical physics and information processing, quantum computing, and machine learning, particularly your recent publications such as *"Transfer Learning for Deep-Unfolded Combinatorial Optimization Solver with Quantum Annealer"* and *"Deep Unfolded Local Quantum Annealing,"* resonates deeply with my academic and career aspirations.

Currently, I am pursuing a Bachelor’s degree in Computer Engineering at Savitribai Phule Pune University, where I have cultivated a strong foundation in machine learning, deep learning, and statistical data analytics. My academic coursework in Probability and Statistics and Machine Learning has further fueled my interest in computational methods for solving complex problems.

During my Data Science Internship at Profcess, I worked extensively on developing and optimizing scalable data pipelines for time series forecasting, utilizing tools such as Azure Databricks and frameworks like XGBoost and SARIMA. Additionally, I collaborated on projects involving computer vision and large-scale language model (LLM)-based applications, equipping me with experience in handling real-world datasets and computational challenges.

My project portfolio reflects my passion for applying advanced methodologies to tackle practical problems. For instance, in Pulsemate, I developed a cardiology chatbot integrating retrieval-augmented generation (RAG) for real-time medical insights. Similarly, in my Potato Disease Classification project, I employed CNNs and OpenCV, leveraging CUDA acceleration for efficient processing. These experiences align closely with your lab’s focus on machine learning applications and quantum computing techniques for optimization and pattern recognition. In addition, my Practical AI with Python certification demonstrates my continued commitment to expanding my proficiency of AI and machine learning. Furthermore, my Japanese proficiency (JLPT N3) qualifies me as an ideal candidate for seamless integration into your research environment and effective collaboration in a Japanese academic setting.

What excites me most about your lab is its focus on leveraging quantum annealing and deep neural networks to tackle challenging optimization problems and detect quantum phase transitions. I am eager to contribute to your research by applying my skills in Python, PyTorch, TensorFlow, and statistical modeling to further explore the synergy between machine learning and quantum computing.

I would be grateful to explore my qualifications and potential contributions further. I am looking forward to the opportunity to cooperate and contribute effectively under your respected guidance.

**Regards,**

Krish Bakshi