Risan Raja

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To whom it may concern:

With over four years of experience in developing and implementing innovative machine learning solutions, coupled with a strong aptitude for problem-solving in dynamic environments, I am confident I possess the skills and passion to significantly contribute to your research team.

My recent experience as an ML and Computer Vision Research Intern at the Center for Computational Brain Research, IIT Madras, has provided me with invaluable experience in tackling complex research challenges within the neuroscience domain. During this role, I successfully repurposed and optimized state-of-the-art MRI registration pipelines for histological images, overcoming the hurdle of handling exceptionally large datasets exceeding 200GB per image. Furthermore, I developed a novel pipeline for error detection in anatomical annotations, leveraging geospatial data processing techniques, showcasing my ability to apply interdisciplinary approaches to unique problems. Crucially, I designed and implemented an end-to-end ETL pipeline using Dask and PyTorch, achieving an impressive throughput of 100K patches per second for asynchronous streaming of large histological images for deep learning model training. This highlights my proficiency in building scalable and efficient data processing systems critical for research environments.

Beyond data pipelines, I actively contributed to the development of a Research-Augmented Generation (RAG) based Question Answering system for neuroscience projects and strategized and implemented model serving using NVIDIA Triton Inference Server on an in-house DGX A100 cluster. My commitment to streamlining workflows extends to automating CI/CD pipelines with Jenkins and Docker and contributing to an in-house code suggestion tool powered by AST-based code generation and Mistral 7B, demonstrating my dedication to enhancing research productivity through innovative tools.

Prior to my research internship, as a Business Analyst at IBG Consulting, I applied machine learning to solve real-world business challenges. I developed a PyTorch and NIXTLA-based model to analyze commodity markets, improving warehouse stock turnaround time by 20Additionally, I fine-tuned a T5 model using PEFT to refine analyst reports, increasing downstream pipeline efficiency by approximately 30These experiences underscore my ability to translate complex data into actionable insights and deliver tangible business value through machine learning.

My technical projects, such as redesigning the Temporal Fusion Transformer to outperform the original

Kaggle challenge solution and optimizing the NAVER SPLADER model for efficient resource utilization, further demonstrate my commitment to pushing the boundaries of machine learning. My achievements in AI Hackathons, including a First Place win for creating an AI Agent for high-resolution photography enhancement using Reinforcement Learning, and top rankings in WorldQuant Alpha Challenge, solidify my competitive drive and innovative problem-solving capabilities.

My skills encompass a wide range of machine learning frameworks including TensorFlow, PyTorch, and Scikit-learn, along with expertise in cloud platforms like GCP and AWS, and containerization technologies such as Docker and Kubernetes. I am proficient in Python, JavaScript, and C programming languages.

I am confident that my research-oriented mindset, proven ability to develop and implement innovative ML solutions, and strong technical skills align perfectly with the requirements of this Research-Focused Machine Learning Engineer position. Thank you for considering my application. My resume, attached for your review, provides further detail on my qualifications and accomplishments.

I am eager to discuss how my skills and enthusiasm can contribute to your team's success.

Thank you for taking the time to review my application. I look forward to hopefully meeting with you in the future to further discuss my qualifications in person. If you have any questions, please feel free to email me at risan.raja@icloud.com or call me at 963-332-6718.

Sincerely,

John Doe