Personal Statement

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From an early age, I was fascinated by how the world works, constantly asking questions and exploring ways to uncover deeper insights into the problems around me. This curiosity shaped my academic journey, where I developed a keen interest in the intersection of data and technology. Over time, this interest evolved into a passion for artificial intelligence (AI) and its transformative potential to drive real-world change. My decision to pursue research in AI and data science stems from my desire to harness these technologies to solve critical issues across various domains.

Throughout my academic career, I have consistently sought out opportunities that allowed me to explore the world of data science. In middle school, I joined several clubs that fostered analytical thinking, and in high school, I participated in projects where I applied data-driven approaches to analyze weather patterns. However, a pivotal moment came during the COVID-19 pandemic. I channeled my curiosity into predicting trends in COVID-19 case numbers by building forecasting models. This project was my first real-world application of data science, solidifying my passion for using data to solve pressing global problems.

A significant milestone in my research journey was my participation in the KDD Undergraduate Consortium earlier this year. This experience provided me with invaluable exposure to cutting-edge research and applications in data mining and AI. Engaging with experts and peers in the field inspired me to push the boundaries of my own research and explore how AI can be applied to real-world challenges. I was particularly captivated by the discussions on machine learning, natural language processing, and reinforcement learning, which motivated me to further explore these areas in my research.

Following the KDD Consortium, I had the opportunity to work on an impactful project with Looma Education, an initiative aimed at providing affordable educational resources to students in Nepal, particularly in regions without access to the internet or stable electricity. The project is designed to deliver modern education through hardware and software solutions that include digital versions of textbooks, instructional media, and an easy-to-use interface for teachers.

During my time with Looma Education, I proposed and developed a retrieval-augmented generation (RAG) pipeline to enhance the language model's ability to provide accurate and contextually relevant responses by integrating external documents from Looma's extensive database. This was an exciting endeavor, but it came with significant challenges. Implementing the RAG pipeline introduced issues such as increased latency in retrieving information, which slowed down the system, and at times, the language model generated responses that were incoherent or unrelated to the user's queries. These challenges pushed me to think critically and develop creative solutions to refine the system's efficiency while maintaining the accuracy of the model's outputs. This experience underscored the importance of adaptability and resilience in research, qualities that I have since integrated into my approach to AI research.

My technical skills have been further refined through multiple internships at Looma. In 2024, I was tasked with integrating LangChain's large language model (LLM) pipeline into the backend of Looma's system, preprocessing documents, generating embeddings, and improving search capabilities through a RAG application. I built this pipeline using Streamlit, which allowed us to visualize and interpret LLM responses more effectively. Additionally, I improved client-side functionality using Javascript, which has had a lasting impact on Looma's search engine performance.

In 2023, my work with Looma focused on improving search engine performance using classical information retrieval (IR) methods like BM-25. I implemented text embedding and named entity recognition (NER) techniques to enhance search relevance within over 780 documents. By using Python, HTML, and Node.js, I was able to improve the overall user experience, and the changes I implemented were deployed in more than 150 working models. These projects highlight my ability to apply both classical and modern NLP techniques to real-world problems.

Beyond my work at Looma, I have gained experience in teaching and mentoring through my role as a Teaching Assistant (TA) for the Data Structures and Algorithms course at NYU in 2024. This position has strengthened my communication skills, as I assist students in understanding complex algorithms, data structures, and computational theory. Teaching has also provided me with a new perspective on AI research, helping me to simplify complex concepts and present them in ways that are understandable to others.

Furthermore, my experiences as a Coding Instructor at

The Coder School in 2023 allowed me to mentor younger students in computer science topics, including Java and Python. These teaching roles have reinforced my passion for fostering education through AI and technology, aligning closely with my ongoing work with Looma Education.

The most exhilarating aspect of AI research, for me, is the potential for transformative societal impact. The ability to leverage AI to address critical issues—whether it is improving access to education, optimizing healthcare, or advancing automation—is what drives my dedication to this field. AI, particularly in the domains of natural language processing (NLP) and machine learning, offers immense potential for making a positive difference. I am particularly fascinated by how language models can evolve to bridge the gap between technology and human interaction. As language models become increasingly sophisticated, their ability to serve as tools for education, healthcare, and communication in underserved communities grows as well. This is an area I intend to explore further in my future research.

In addition to my technical pursuits, I have developed leadership skills through my involvement in various research initiatives. Leading a collaborative team for the Looma Education project allowed me to sharpen my ability to manage a multidisciplinary team, communicate complex technical ideas, and balance competing project goals. This experience has been invaluable in preparing me to take on leadership roles in future AI research projects, where effective collaboration and clear communication are critical to success. These experiences have not only improved my technical skills but also my ability to guide and inspire others to work toward a common research goal. As I continue my journey in AI research, I aim to bring these leadership qualities to bear in advancing the field.

Throughout my academic and research experiences, I have also faced significant barriers. As an undergraduate, I often encountered difficulties in identifying appropriate tools, processing data, and selecting models that fit the problem at hand. Learning how to handle data cleaning, model selection, and algorithm fine-tuning required a steep learning curve. However, I viewed these challenges as opportunities for growth, and over time, I developed strategies to systematically address these issues. One of the most rewarding aspects of overcoming these challenges has been my ability to refine my approach to research, becoming more efficient and adaptable in the face of complexity.

As I look ahead to the AAAI Undergraduate Consortium, I see it as a unique opportunity to further develop my research skills, present my work, and engage with professionals and peers who share my passion for AI. I am eager to receive feedback on my research and gain insights into the latest advancements in the field. This exposure will be instrumental in shaping my future research directions, particularly as I continue to explore the application of AI in education and social good. Moreover, I hope to gain mentorship from AI experts who can help me refine my research and guide me as I pursue graduate studies in AI.

In return, I believe I can contribute a fresh and socially-conscious perspective to the consortium. My experience working on projects like Looma Education has deepened my commitment to using AI for societal benefit, and I am eager to share my insights on how AI technologies can be leveraged to tackle challenges in low-resource settings. Additionally, my interdisciplinary research background allows me to contribute meaningfully to discussions on how AI can drive real-world change, particularly in underserved communities. By fostering innovation and collaboration, I hope to inspire others in the AI community to think critically about the ethical and societal implications of the technologies we create.

Ultimately, my passion for AI research is driven by the belief that technology, when used thoughtfully, can create significant positive change. I am excited to continue pushing the boundaries of what is possible in AI, working toward solutions that not only advance the field but also make a meaningful impact on the world.