Research Statement :

I am a third year undergraduate student at IIT Guwahati, with a strong research-oriented interest in AI, particularly NLP, agentic systems, and machine learning. Although my major is mechanical engineering, my academic and project work over the past few years has been increasingly focused on understanding how AI systems are built, evaluated, and deployed.

My research interests broadly lie in agentic AI systems that integrate language models, multimodal inputs, and external tools, and in studying their behavior under realistic constraints such as noisy data, imperfect inputs, and distribution shifts. I am particularly interested in how such systems reason, where they fail, and how their robustness and alignment can be systematically evaluated and improved.

I have gained hands-on experience across a range of AI domains through independent projects and research internships. My work has involved building machine learning systems, implementing transformer architecture from scratch, and designing agentic workflows for structured reasoning and decision-making. Through these efforts, I have worked extensively with transformer models, RL (PPO with IRL inferred rewards), RAG pipelines, OCR-based document processing, and multi-agent coordination frameworks. These experiences have helped me develop a practical understanding of model behavior beyond standard benchmarks, especially in settings where errors propagate across components.

Experience :

As a previous NLP research intern, I have also worked on benchmarking and evaluating reasoning capabilities of LLMs using controlled experimental setups. This developed my interest in reproducible evaluation, metric design, and comparative analysis of model performance across tasks and settings. In parallel, my exposure to deploying deep learning models on constrained systems, including low-power and edge environments in ZoionNet, has made me conscious of real-world trade-offs between accuracy, efficiency, and reliability.

Collectively, these experiences have shaped my motivation to pursue research at the intersection of NLP and agentic AI. I am particularly drawn to problems that require thinking about AI systems across data ingestion, reasoning, decision-making, and downstream impact.

Purpose :

Through a Research Internship at Precog Lab, I hope to work in a rigorous research environment that allows me to deepen my understanding of advanced AI systems, collaborate closely with faculty and graduate researchers, and contribute meaningfully to ongoing research efforts. The program aligns well with my long-term goal of pursuing a PhD and building a strong research rigor.