**Independent Study**

**Research Interests**

1. "My Primary research focus revolves around the design and optimization of large language models. I am deeply involved in exploring methods to develop and refine models capable of handling vast amounts of linguistic data efficiently. By delving into areas such as architecture design, parameter optimization, and computational efficiency, I aim to enhance the performance and scalability of these models. Through rigorous experimentation and innovative techniques, my goal is to push the boundaries of large language models, enabling them to excel in various applications and domains."
2. “My Secondary research interest centres on blockchain-driven solutions for enhancing transparency and security in supply chain management. Specifically, I focus on developing Solidity smart contracts on the Ethereum blockchain to ensure data integrity and implement access controls for product authentication.”
3. “My third research interest revolves around advancing vector database technologies for the storage and training of large language models, aiming to optimize data retrieval and manipulation processes. Spearheading innovative strategies, I focus on devising search optimization techniques such as approximate nearest neighbour algorithms and dimensionality reduction methods to expedite query processing while maintaining high accuracy.”

**Education/career Goals**

I am driven by a clear vision for my future. My ultimate ambition is to establish a software consulting firm tailored to the needs of small businesses in rural India. I envision this enterprise as a catalyst for growth and prosperity in these underserved regions, leveraging technology to bridge the gap between rural businesses and their potential for expansion. In the near term, I aim to immerse myself in the IT industry, gaining practical experience and honing my skills as an IT professional. This phase is crucial for acquiring the insights and expertise necessary to later guide my entrepreneurial journey. On the educational front, I am currently engaged in a research project that sits at the intersection of cutting-edge technology and practical application. This project involves a thorough evaluation of Large Language Models, like GPT, in conjunction with vector databases. My focus is on assessing the performance and efficiency of these models, which promises to contribute valuable knowledge to the field. Simultaneously, I am involved in a project. This project is particularly exciting as it explores the integration of Blockchain technology in inventory management systems. The goal is to ensure the authenticity of products for a specific company, culminating in the issuance of certificates that attest to their legitimacy. My tenure at Iowa State University is a quest for knowledge. I am committed to delving into research that not only enriches my academic experience but also lays a solid foundation for my future endeavours.