**Career Goals and Interests:**

After examining various areas of research in Computer Science Engineering, I zeroed in on **Natural Language Processing** (NLP) that plays a key role in today’s most exciting technological achievements, including automatic conversational assistants, sentiment analysis, text summarization, information extraction and Internet search. In *two years of software development and research* at **Samsung R&D Institute** India, one of my most challenging projects involved building a sophisticated personal assistant competitive to Siri and Cortana. It exposed me to classification models ranging from traditional support vector machines to deep neural networks. My thirst for research in an independent academic setting motivates me to now pursue a Master’s in Computer Science. After Master’s, I wish to get back to the industry, solving *problems around context awareness, language detection, domain stitching and prediction system*.

**Academic Journey:**

As part of my undergraduate study in Computer Science at Vasavi College of Engineering, **Osmania University**, I was immediately drawn towards Operating Systems, Databases, Algorithms, Programming Languages and Artificial Intelligence. I always enjoyed spending hours in the labs to correlate theory to practical scenarios. This, in turn, fortified my concepts and helped me to stay in the top 10% of the class throughout college, eventually winning a *national merit scholarship from Government of India* for consistently outstanding academic performance.

During my first year, I was attracted to programming due to its ubiquitous relevance. I enjoyed participating in online competitive coding websites such as TopCoder, Spoj, etc and won several programming contests in college level like *Microsoft IDC regional programming contest*. Through hours of practice and extensive problem solving, I learnt how to optimize my code solving problems in lesser time complexity. These lessons towards building a solid programming foundation will go a long way in my ability to write robust and scalable software in my career.

I applied some of these when I implemented a **Library Book Management** System using MySQL and JAVA. During the development phase, Iencountered various problems such as when multiple users are blocking same book online at same time: deadlock detection. To avoid deadlocks, I used methods such as wait-for graph, consistent lock acquisition ordering access and ensured that data consistency is maintained. After thorough testing, this system replaced the older manual management process (for allocating books to students, maintaining track of books count currently available etc). It was a proud feeling when the institute decided to adopt this system for live usage and system worked flawlessly for college students.Inspired by this, I decided to implement another software for **Online Programming** **Contest** which accepts solutions to algorithmic problems in various languages, judges them and gives verdict accordingly. Later this was used by programming cell department Mission R&D to conduct weekly programming contests in college.

A desire to push my boundaries saw me taking up work in interdisciplinary areas. For my major project, I worked on ‘**Context based searching** **of files**’ using NLP-based knowledge books. The underlying principle is that ‘Search will be efficient when segregation is done based on the content of the file instead of solely on name’. This project applied NLP to information retrieval. As a Machine Learning enthusiast, I went a step further by designing and implementing an algorithm for rule-learning as well. This algorithm provided the necessary support for unsupervised Word Sense Disambiguation. My efforts were paid off when this project was *graded full 10 points*.

**Professional Experience:**

Grabbing an internship at **Samsung R&D Institute** India was a pivotal milestone for me as I was the only student from my college to clear all its technical interviews. I was assigned to work in the highly-selective core Machine Learning group within **S-Voice,** which is a voice based personal assistant, due to my NLP research background. I contributed new feature addition to S-Voice which includes phonetic matching in NLU plug-in for English US culture. This feature solves two issues - recognition of names which has similar phonetic encodings and reducing the aliases for names used in matching. Compared to earlier system, it optimized the name matching using Phonetic algorithm. After successfully integrating Metaphone-3 phonetic algorithm to NLU core with improvements to solve tailing vowels issue, I was rewarded with the pre-placement offer in Samsung Research.

As part of my full time working module, I have implemented a logistic regression model to predict whether a text belongs to primary domains like Call, Alarm, Calendar etc or secondary domains like Wolfram Alpha, Web Search etc with feature vectors as statistical model probability and rule based semantic pattern matching attributes. After classification of domains, S-Voice uses Semantic Patterns to determine actual intent of text and generates NLG for follow-up contexts. S-Voice Engine mainly built on rule based semantic parser along with few statistical plug-ins, it can’t perform seamless domain switching. To add seamless domain switching in S-Voice, I proposed an idea and implemented a plug-in which performs **anaphora resolution** using Stanford Coreference resolution with some rules included. Later this idea was selected for the c-lab, which is organization level innovation contest in Samsung. As a result, I was bestowed upon the ‘**Employee of the month’** award by Dr. Vikram Vij – the Vice President. *My experience at Samsung has familiarized me with the large-scale machine learning problems and I look forward to explore them further in Graduate School*.

**Why MS and Stony Brook University?**

My long term goal to pursue a career in industrial research demands a comprehensive exposure to latest topics in **Artificial Intelligence, Machine Learning and Natural Language Processing**. Recently, I have enjoyed digging into ambiguity problem, trying to recognize lexical inference and language variability. While Samsung exposed me to building NLP applications and encouraged my research initiatives, I yearn for the academic freedom to choose my own projects. Master’s is an important first step in achieving this objective.

Ongoing projects and researches in Artificial Intelligence at Stony Brook University by Niranjan Balasubramanian particularly in Process Representations for QA, Probabilistic Reasoning for QA and researches by Ritwik Banerjee in NLP align greatly with my interest and goals. I choose to apply to Stony Brook University because of excellent faculty available in subjects such as Machine Learning, Natural Language Processing, Databases and Algorithms. I am sure that your M.S program will finally lead me to my goal. I am aware that Stony Brook University expects high standards from students; I shall be committed to my work and will strive hard to utilize every opportunity given to me in the best possible manner.