Abhudaya Shrivastava

From an early age, a profound passion for Computers and Technology began to take root within me. At the tender age of four, I was first introduced to Microsoft Paint through school, and my innate curiosity drove me to explore my initial encounter with a video game, "Conflict: Desert Storm." As I progressed in my academic journey, I acquired valuable knowledge about various computer applications. During my penultimate and final years of schooling, I encountered a significant coding assignment that entailed utilizing NetBeans IDE, the C Programming language, and MYSQL. Drawing upon my creativity and understanding of management and organizational structures, I proposed the topic of an airline booking management system application for my group. This application encompassed numerous features, ranging from facilitating flight bookings on any given day to calculating miles and displaying paths on a globe. Engaging in this project provided me with a fresh perspective on the realm of computer science, enabling me to transcend mere enthusiasm and aspire toward true innovation. Prior to this experience, while my zeal for innovation and research was evident, I lacked the practical knowledge of how to pursue it effectively. However, the two years of my high school education served as a transformative period, opening doors for me to explore and delve into ideas that yield innovative solutions applicable to real-life scenarios. This newfound curiosity urged me to venture beyond the realm of Computers and delve into the scientific principles that underpin them, thereby empowering me to test novel ideas for practical applications. Consequently, at the age of fifteen, I took the decisive step of enrolling at Rutgers University Camden to pursue a ‘degree in Computer Science and Finance. This educational pursuit not only fueled my passion for technology but also paved the way for my future endeavors in the realms of innovation and research. My aspiration is to develop pragmatic solutions to real-world complex systems, thereby making a meaningful contribution to society.

During my time at Rutgers University, I was awarded a merit-based scholarship due to an impressive CGPA in high school and SAT score. Throughout my studies, I encountered various challenging yet significant concepts across diverse courses. Additionally, I developed optimized solutions for stack and queue operations. Building on my skills and prior knowledge in Computer Science, I secured internships in Research and Development roles as a Data Scientist and Analyst, which is my career goal. These experiences allowed me to acquire technical and soft skills including but not limited to Advanced Python Programming, Tensor Flow, Geocoding, UI/UX Design, Tableau, ETL pipeline deployment, Apache Airflow, MYSQL Workbench, Microsoft SQL Server, Leadership, Teamwork, Optimization. While facing novel

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challenges. Daily, I worked with extensive datasets and prepared them for analysis and deploying AI engines. I am particularly proud of two internship projects. Firstly, I enhanced a navigation system by creating a data mining algorithm to transform data into a readable format, incorporating geocoding for precise location information. Secondly, I collaborated with the Road Transport Authority of Dubai to automate the Transit Line Monitoring System. I deployed a neural network-based machine learning model for a complex system to detect transit disruptions, and overcoming data formatting challenges through research and perseverance.

While I worked my way up with professional experience, I remained steadfast in my goal to innovate using Computer Science concepts for the betterment of society and the future. This led me to delve into research, with a particular fascination for Artificial Intelligence (AI). Determined to contribute, I wrote my first paper, "Using Deep Learning and Machine Learning in Space Network," published by IEEE at a conference in Abu Dhabi, U.A.E. The paper explores Transfer and Data Relay Systems (TDRS), which transmit space data from rovers and telescopic satellites. I employed neural network models: Data Belief Network for probabilistic reasoning in decision-making for rovers and satellites, and Restricted Boltzmann Machine for feature learning and generative modeling based on data from satellites and rovers. The RBM also supports the DBN in decision-making with feature learning and planetary object analysis. My interest in research deepened, leading to my recent IEEE paper, "Security Analysis for Threats to Patient Data in the Medical Internet of Things". It addresses the security of Medical IoT, used for multiple applications to record and transmit data all over the hospital network. To counter security threats, I proposed implementing Transport Layer Security, Virtual Private Networks, and Cryptography for data transmission. Additionally, I suggested using neural networks for daily encryption updates and traffic analysis. Through contributions in the field of research and innovation, I aim to advance in AI and its applications by contributing as Data Scientist and/or Machine Learning technology evangelist.

Based on my prior experiences, I am aware of the path I wish to pursue. Seeking mentorship and guidance, I am determined to embark on a Ph.D. journey in Computer Science, focusing on Artificial Intelligence and its Applications. During my junior year of Undergrad, I explored some of very prestigious universities which offers unique research opportunities. I found the Columbia University courses and research opportunities

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in Artificial Intelligence, Machine learning, and Security & Privacy to capture my interest, especially the ongoing projects in different labs and multiple publications across labs via faculties. Their brief description of projects and admiration towards many publications in the above three fields resonated with my desired knowledge and skill development. Confident in my decision, I believe Columbia University offers the best academic environment for my aspirations. With mentorship and the comprehensive course offerings, I am optimistic about making significant contributions to the fields of Artificial Intelligence, Machine Learning and Security & Privacy pursuing my Ph.D. in Computer Science.