

## **STATEMENT OF PURPOSE**

It may not be my place to criticize or condemn Putin for his presidential stance, but his comment about the world domination by the country leading in AI-Based tech is accurate down to the last word. With the fourth industrial revolution afoot, AI, IoT, and quantum computing have emerged as the eminent factors forming the crux of the current socio-cultural fabric. With my age-old love for computing and information technology, I have always remained extremely excited about innovations happening in this field; from binary digits to human robots mimicking human intelligence. Further, I aspire to revamp my knowledge in this domain, acquire a better skill set while enhancing the existing one, and rethink computer science with the latest developments in this domain, such as Database Systems, Computational Intelligence, and Machine Learning, so that I can be ready to contribute across systems worldwide. The creativity and meticulousness involved in professing a career in this domain are precisely what has inspired me to upskill myself through a master's program. Therefore now, I wish to pursue a Master of Science in Computer Science from Stony Brook University.

The journey of my undergraduate program specializing in CSE, I must say, was a wonderful one, for me it was a chance to live my dream – the dream of coding and developing fantastic applications. I gave my hundred percent in making the most of this program by deep-diving into modules such as Analysis Design of Algorithms, Object-Oriented Programming, Software Engineering, Database Management Systems, Compiler Design, Data Analytics, Machine Learning, and many more, which is why I can proudly speak of having solid fundamentals today. To complement my theoretical learning with practice, I underwent a series of projects and internships along with some online courses.

One of my most important projects concerned identifying plant diseases through deep learning methodologies. My decision to take up this project stemmed from witnessing my maternal uncle losing a considerable chunk of his plantation at the hands of a pathogen attack and weather conditions. The success of this project changed my perspective of seeing this in merely an academic light but as an idea that needed to be converted into a full-blown venture in the Agri-tech industry. A good vouch for the innovative relevance of our project came from its selection as one of the finalists in three national-level innovation challenges. An article about our project idea in the local newspaper further boosted my confidence. I documented the findings in a research paper titled "Detection of Bell Pepper Crop Diseases using Convolution Neural Network".

Taking this streak of addressing real-world problems through technology further, I developed a website in my final year summarizing audio inputs from online classes and meetings. The thought was to relieve the fatigue building upon my peers due to extended screen times during the pandemic. An urge to make informed choices between the various summarization algorithms prodded me towards penning a review research paper, "Extractive Text Summarization Techniques", which compared different summarization algorithms. Although empathy may have been a driving factor behind all my projects, the motivation to eradicate these issues with technical interference is what I gained out of these experiences.

Applications of AI stretch far beyond disease identification and text summarization; the way data, algorithms, and advanced technology are closely associated with solving the problems of humankind and organizations in this dynamic world of data gravitates my interest unequivocally in this domain. Whether it be Machine Learning or Big Data, I believe that extracting insights from the wealth of data and training the model with them will facilitate a better, secure, and informed future. Witnessing the miracles of Computer Science, I seek its myriad of learning, and my aspiration rests firmly on developing applications that will benefit the communities around me.

While my research pursuits armed me with an analytical and scientific viewpoint, it was my involvement with the Entrepreneurship Development Cell of my college that morphed me into a self-reliant person with a flair for entrepreneurship and team management. Leading the E-Cell towards several recognitions, impacting more than 2000 students, and conducting more than 80 events to foster entrepreneurship while maintaining high

academic grades was like a crash course in time management. My multidisciplinary involvement in the college earned me the title "Ideator of EDC, Acropolis."

Furnishing my learning graph with my Internship, I received a six-month training from Persistent Systems. During the final assessment of the Internship, my team and I worked on a project, which was a dynamic website constructed through spring boot to find nearby hospitals and book beds during the second peak of the COVID pandemic. Because of my performance, I converted this internship into a full-time job opportunity as a Software Engineer. Presently, my responsibilities include functionality development, bug fixes, working on customer issues based on our applications, debugging, and providing them with the root cause and a workable solution, whether it comes from the database side, application scripts, or code alterations/fixes. Parallelly, I have served on several high-priority cases throughout my professional tenure, ensuring minimum turnaround time and zero escalations.

Spearheading numerous projects has given me insight into various technologies, frameworks, databases, and tools, such as Network Performance Monitoring, Microservices, Spring Boot, DevOps technologies, and Columnar databases to name a few. Having worked with clients on various projects, I often receive appreciation for my input to tasks. However, at the same time, there are many challenges to face, all of which help me learn a lot. At work, every time a development environment is involved, the tasks for me become much more complex, and there are chances of mismanagement. Such critical times teach me to stay calm and focused in difficult situations. Through the project I handled with Persistent Systems, I was able to comprehend the significance of data welding to produce predictive insights for the future and create simple dashboards to display the data in a relevant way.

At this point in my career, pursuing a graduate program in Computer science is highly important to me. It will substantially contribute to bridging the gap between my current level of exposure and that which I look forward to having for being a much more competent professional in this field. Every sphere imaginable has been infiltrated by sophisticated technology, thanks to developments in AI/ML and the omnipresence of data. In the longer term of my career, I want to combine my affinity for these domains with my technical finesse and managerial acumen to veer startups and organizations toward socially-responsible innovations. With my entrepreneurial mindset, I want to set up my venture over the next ten years and utilize my knowledge, flexibility, and exceptional multitasking skills to serve my clients and generate employment for young professionals while staying true to my vision of innovation. In the foreseeable future, I also see myself drifting back to research to balance my professional achievements with scholarly pursuits. The MS in CS program offered by Stony Brook University will be highly conducive to my goals.

From the profound research environment on the campus to the streaks of innovation, Stony Brook University can be a great place to thrive academically, which has professors who are in the top echelons of their respective fields. University's modules on Machine Learning and Big Data will bring me closer to my professional objectives which adhere to the highest educational and research standards within the flexible and versatile curriculum along with various research communities and practical learning. I am particularly excited to learn under the eminent guidance of Prof. I.V. Ramakrishnan and Prof. Steven Skiena whose work coincides perfectly with my research interests in machine learning and building realistic predictive models through big data and performing analytics. University's strong emphasis on a flexible course structure, ongoing work and projects in Data Science Lab and AI Institute, Roth Pond Regatta, campus traditions, and outstanding ROI allures me to become a part of your growing family with my expected career goals and going "FAR BEYOND".

In the end, I am incredibly thankful for being allowed to put forth my candidature for the program. With much humbleness and enthusiasm, I look forward to joining your university for the MS in Computer Science program.

**Regards,**  
**Sarthak Parakh**



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**Letter of Recommendation**

I feel elated to write this Letter of Recommendation to support Mr. Sarthak Parakh as a candidate for the Master's degree program at your acclaimed university. I have seen him evolve from his freshman year to his senior year at Acropolis, and I can say that he is one of the brightest and most task-oriented individuals with a variety of skills and has consistently raised the bar higher. I've been teaching and researching for around 14 years and have specialized in Compiler Design, Data Structures, Cybersecurity and Information Security, Object-Oriented Programming and Programming Practices.

I had the fortune to teach him Data Structures, Object-Oriented Programming and Methodologies, and JAVA Programming during the second year, and Theory of Computation along with its lab sessions in the third year. Additionally, I was his class coordinator in his third year and project coordinator during his final year. For my subjects, I would place him in the top 1% of his batchmates. His capacity to discern abstract concepts and draw critical conclusions based on theory is impressive. He has the ability to propose novel answers to the problems posed throughout the lectures. He attempted to tackle several real-world problems in agriculture and education through his pre-final and final-year projects. He performed admirably well as a team leader and technical developer, along with providing the needed outcomes.

His interest in the classes was clear from his thought-provoking questions in and out of the class. His acute sense of class involvement was evident to me from the way he used to present his concepts in class discussions, thereby expanding both his conceptual base and that of the class as well. I observed him supporting his classmates who were struggling with the concepts of the subject and the challenges assigned in class. He has the capacity to properly explain his argument because of his clear thoughts and concepts, as well as his knowledge of their applications, which also helped him clear his interviews. He has distinguished himself through his focused attitude, intellect, and will to succeed in all he undertakes.

He is a bright and diligent individual who enjoys taking on new challenges. His strong suit is his exceptional communication, presentation, independent thinking, and problem-solving abilities. He is a quick and proficient learner who welcomes constructive criticism and is constantly open to recommendations for growth. He is characterized by the professionalism with which he carried out his projects, department activities, and other Entrepreneurship Development Cell activities. He developed his individuality and formed a strong network through extracurricular activities.

Sarthak has outperformed our expectations in almost every way and has been an asset to our college. He has an innate aptitude for the field of Computer Science and would do well to enhance his knowledge and understanding in the field through a graduate program. I strongly believe he has the ability to excel in a competitive environment, be it academic or professional, given his ardent desire to undertake graduate studies. I am confident that he will give his all to this endeavor. Consequently, based on his strong undergraduate preparation and his motivation for graduate studies, he has my most elevated support for admission into his ideal course at your university with deserved financial support.

**Nidhi Nigam**  
Assistant Professor

Department of Computer Science and Information Technology





### Letter of Recommendation


It's a great opportunity for me to recommend my student Mr. Sarthak Parakh for bolstering his admission to the Master's degree program at your esteemed university. I have been in the teaching and research profession for 15+ years and worked a couple of years in the industry. I'm specialized in various Computer Science subjects such as Data Structures, Machine Learning, and many more. Having observed Sarthak's exemplary academic performance, I can confidently state that he is one of the most sincere and dedicated students I have ever met. I taught him Software Engineering and Machine learning concepts and conducted his lab sessions when I was a senior Professor in the Department of Computer Science.

I observed Sarthak's capabilities when he started asking a series of questions in my lectures which showcased his curiosity and willingness to enhance his skill set and get better clarity in Software Engineering. His way of mapping his queries with real-life examples and scenarios shows his pragmatic approach, keen awareness, and knowledge about the topic. He also won a cash prize in an in-house competition based on developing a project covering all the aspects of software principles and documentation, following a specific software model. He created a dynamic website with an agile approach that was beautifully presented with all necessary details and user stories. In lab sessions, he meticulously participated in discussions on mapping use cases and simplifying utilities of existing applications and software and ways to optimize them. He always seized the opportunity to participate in sessions and workshops organized by industry experts related to software engineering in the department. His zealous and inquisitive nature always made him stand out from his peers.

At the time of his Machine Learning classes, he was active in other extracurricular activities. Therefore, he missed some of my classes but was always on track with additional insights in the subsequent classes. He has the ability to complete multiple tasks with favorable results despite deadline pressure. Exhibiting his awareness, he discussed various opportunities coming up in Machine Learning and related fields. He was very punctual and devoted in his work and submitted his assignments and practical work on time. His great communication and leadership qualities were evident in his class initiatives. He managed to learn about different programming languages and also completed online courses parallel to his classes to boost his knowledge and practical skills in concepts of Machine Learning and Deep Learning which he utilized in his projects through concepts of Natural Language Processing and Image classification. His active research in understanding the problem and empathizing with the end-users to solve real-life problems through his projects helped him go to the root of the cause. Furthermore, I would rank him among the top 2% of his batch mates.

Sarthak is a very enthusiastic and social student who loves to discuss different activities and have his opinions to discuss around. He also encouraged and helped his juniors, peers, and seniors to participate in various entrepreneurial activities and upscale their projects into business models. Being in the Entrepreneurship Cell and other volunteering work, he diversified his personality and also managed consistency in his department work and studies.

He is indeed a deserving aspirant to be part of your eminent university. He will not only excel in your department but will also help his surroundings flourish. Your Master's program can nurture and polish his existing skills. I strongly recommend him for a graduate degree at your university and any merit-based financial assistance. You won't regret having him onboard.



**Dr. Shilpa Bhalerao**  
Professor & Head of Department  
Department of Computer Science and Information Technology  
Acropolis Institute of Technology & Research, Indore (M.P)  
shilpabhalerao@acropolis.in



## **Letter of Recommendation**

I am glad to endorse Mr. Sarthak Parakh for his Master's application at your esteemed university. I have more than 14 years of expertise in the technological field. I have been Sarthak's onshore point of contact for the **Tivoli Netcool Performance Manager - Wireless** project from July 2021 while working as a Project Manager, TNPM at Persistent Systems Limited. Since its founding in 1990, Persistent Systems has served as a trusted provider of Digital Engineering and Enterprise Modernization services and products.

Sarthak and I recently discussed his decision to pursue higher studies, and I support his decision and an ardent desire to take his dedication and skills to the next level. Sarthak commenced his professional career with us, undergoing and acing a written aptitude and technical test followed by coding rounds and three rigorous interview rounds. I evaluated his performance after his internship and mini-project completion. He showed a temperate attitude with a persistent mindset of learning new concepts and technologies and an aspiration to work on data processing which made me select him for our project.

Sarthak started off working with some of our major clients for their internal application issues (TNPM -Wireless) which mostly included JAVA backend and database fixes and feature enhancements. He was quick at understanding the work requirements as a Java developer and assimilated well in a short time. His excellent problem-solving skills and analysis are self-explanatory stating the exact root cause. He meticulously handled customer issues, out of which some were high-severity cases impacting customer businesses with efficient turnaround time along with quick service restoration. Seeing his diligent efforts, we moved him onto a different application, where he actively participated in the R&D and PoC of an SD-WAN application to build its technology pack. He worked on fetching big data through REST API calls and their preprocessing and presented the data in a usable format. Moreover, he tested the technology pack thoroughly by integrating it into the application and delivered it on time. His extra effort to become familiar with new technologies paid well. His hands-on experience with technology and tools like Scala, Columnar, and Time Series databases, Apache tools - Nifi, Kafka, Spark, DevOps tools - Docker, and Kubernetes further landed him another network performance monitoring project based on microservices and cloud services architecture.

Regardless of the complexity of the task at hand or the novelty of the problem, Sarthak is a valued member of our team on whom we can count. He remarkably handled multiple modules and tasks at a time and quickly established himself as a go-to person in all the modules he worked on. He mentored and guided new team resources most notably by taking knowledge-sharing sessions when almost all his old team members resigned. Sarthak showcased his capabilities to organize his work and be open to all challenges and responsibilities. His technical proficiency and transferable skills have improved considerably since joining. Throughout his time with Persistent, Sarthak has stood out amongst numerous associates and young professionals I have mentored and worked around. His blend of intelligence, commitment, perseverance, creativity, and compassionate character will undoubtedly make him an asset to any academic program. Hence, I encourage you to look favorably upon his application. I have immense confidence in Sarthak's capabilities and strongly recommend him for admission into your graduate program with possible financial assistance.

**Regards,**  
**Sushant Sammanwar**  
**Architect, Persistent Systems Ltd.**  
**Nagpur (M.H), India**  
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## SARTHAK PARAKH

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### EDUCATION

#### Bachelor of Technology - Computer Science & Engineering

Acropolis Institute of Technology & Research, Indore (M.P) – RGPV

2017 - 2021

CGPA: 8.89/10.0

### IT SKILLS & TOOLS

Languages	: C, C++, OOPs, Python, Java
Web Technologies	: HTML5, JavaScript, CSS, Bootstrap
Frameworks	: Spring, Django
Database	: Oracle (PL/SQL), MySQL, Data Structure
Operating Systems	: Windows, Linux
Tools	: Eclipse, NetBeans, SQL Developer, Jupyter Notebook, Google Colab, VS Code, GitHub, Postman

### WORK EXPERIENCE

#### Software Engineer, Persistent Systems, Nagpur

July 2021 - Present

##### Project: IBM Telco Network Cloud Manager & IBM Tivoli Netcool Performance Manager

- Worked on customer enhancement requests and user stories.
- Debugged and analyzed various defects reported by customers for the product and provided respective solutions with code fixes.
- Involved in writing scripts, functions for query optimization in improving database performance of the product.
- Developed an API-file-based SD-WAN monitoring solution.
- Provided patch release with additional functionality updates with manual testing to increase efficiency and accuracy.
- Worked in agile methodology and cross functional team.
- Technology & Tools – Java – Struts, Scala, JavaScript, jQuery, HTML, CSS, Oracle – Database, MySQL, Postgres, CarbonData, Cassandra, NiFi, Docker, Kubernetes, Jenkins, IntelliJ, SSH, Build Forge, Eclipse, Postman, Hyper-V.

#### Academic Intern, Persistent Systems, Nagpur

January 2021 - July 2021

- Worked as intern cum trainee, received training on GIT, Agile, DevOps, SQL, Java, Spring Boot, Hibernate, and Object-Oriented Programming.

##### Project: Hospital Bed Reservation:

- Application website to help COVID patients book & find availability of a bed in hospitals using spring boot and MySQL.
- Worked on Wireframes (Figma) and UI development along with Data normalization and database connectivity.
- Technology & Tools - Java - Spring Boot, HTML CSS, JavaScript, Thyme Leaf, MySQL, Eclipse

### PUBLICATIONS

- Sarthak Parakh, Mohd. Shaikhul Ashraf, Nandita Tripathi, Kumud Pant, Md. Sakil Ansari, Poonam Negi “**Detection of Bell Pepper Crop Diseases Using Convolution Neural Network**” *IEEE Conference (Accepted) - International Conference on Technological Advancements in Computational Sciences (ICTACS)*
- Sarthak Parakh, Shivam Goyan, Somya Jain, Kavita Namdev “**Extractive Text Summarization Techniques**”, *International Research Journal of Engineering and Technology (IRJET) Volume: 08 Issue:05, May 2021*

### ACADEMIC PROJECTS

#### Epitome: Let's Make It Easy: Python - Django, NLP, HTML, CSS, JavaScript, PHP, VS Code

- Application to generate summaries of live as well as recorded meetings/classes using NLP text summarization algorithm.
- Developed a text preprocessing model which further works on text frequency over a document along with user groups.

#### Identification of Plant Diseases: Python: Python - Deep Learning – TensorFlow, Keras, OpenCV, Google Colab

- Application to identify plant diseases & suggest a cure for the disease using CNN image classification technique using OpenCV.
- Developed an image classification neural network with potato crop diseases dataset with 85% accuracy.
- Worked on dataset acquisition and data preprocessing and training CNN model.

#### Attendance Management: Python - Deep Learning, OpenCV

- Application using face recognition to mark attendance using image classification method.
- Calculated attendance over excel sheet with in and out time of an individual after successful facial recognition.

## **COURSES & CERTIFICATION**

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- Coursera – Neural Networks & Deep Learning, AI, Python, Computer Networking, Software Development, Data Science
- Google Analytics Academy – Beginner & Advanced Google Analytics
- Microsoft Technology Associate - HTML5 Application Development Fundamentals & Database Administration Fundamentals
- AWS - training and certification - Data Analytics Fundamentals
- SCRUMstudy - Scrum Fundamentals Certified
- Others – Cloud Computing, IoT, Entrepreneurship & Innovation

## **LEADERSHIP & ASSOCIATIONS**

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### **Senior Advisor, Entrepreneurship Development Cell, Acropolis** **2020 - 2021**

- Selected & guided the new team from the experience of Co-Leader and helped them to promote and align the streak of entrepreneurship and in organizing various events.

### **Co-Leader, Srijan Entrepreneurship Cell, Acropolis** **2019 - 2020**

- With the role of Co-Leader, I lead a team of 25 members. My responsibilities included planning the calendar for the year, designing & conducting central E-Cell events, delegations of roles and responsibilities, connecting speakers and facilitators, fostering entrepreneurship & its awareness, proper functioning of the team, conducting weekly meetings & team building activities.

### **Member, Srijan Entrepreneurship Cell, Acropolis** **2018 - 2019**

- Got multiple opportunities to participate in various sessions, workshops, competitions, and summits.
- Got a chance to start and run a sustainable venture for 3 days by investing a dollar and got 4000 INR ROI.

## **ACHIEVEMENTS**

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- Finalist - National Innovation Contest 2020 organized by MoE's Innovation Cell, MHRD
- Semi-Finalist - 3M-CII Young Innovators Challenge Award 2020
- Nationalist - AICTE Chhatra Vishwakarma Awards 2019
- Won a trip to Singapore & chance to participate in International Start-up Enrichment Tour in a problem-solving competition at IIT Indore.
- Won 1<sup>st</sup> prize in Agile based software development 2019 in CSE Dept.

## **EXTRACURRICULARS**

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- Organized various entrepreneurial and social event during undergraduate program - virtual E-Summit Acropolis 2021, interview series of Srijan: Where Aspirations Take Flight 2020, E-Lead 2020 (E-Summit of Acropolis), Entrepreneurship Awareness Camp 2019 & Joy of Giving Week 2019 for Blind and Handicapped Youth
- Participated in Global E-Summit 2020 IIT KGP
- Participated in Serosoft Hackathon 2019
- Won Intra department Basketball tournament in Annual Sports Week of Acropolis 2018-19
- Participated in Indore World Summit MUN 2018
- Participated and won various competitions in school such as debate, extempore, mono-acting, crafts, sports and many more.