Sujay **Rastogi**

DEPARTMENT OF MATHEMATICS , DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS · BITS PILANI

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Education ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Birla Institute of Technology & Science (BITS), Pilani　　　　　　　　　　　　　*Pilani, Rajasthan*
INTEGRATED MSC MATHEMATICS & BE COMPUTER SCIENCE　　　　　　　　　　　　　　*August 2019 - Ongoing*

- **CGPA:** 8.34
- **Minor:** Data Science
- **Thesis (ongoing):** 'Reasoning using Graph-based decomposition for complex Question Answering' under **Dr. Avishek Anand**, TU Delft
- **Dean Merit Scholarship:** Awarded for 2 consecutive semesters and 1 summer term for being in the top 2% students of the batch.
- **Relevant Coursework:** Graphs & Networks, Probability & Statistics, Optimization, Data Structures & Algorithms, Object-Oriented Programming, Machine Learning, Foundations of Data Science, Computer Programming, Multivariate Calculus, Linear Algebra, Differential Equations

Publications ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

A Novel Room-Based Epidemic Model: Quarantine, Testing, and Vaccination Strategies　　*September, 2023*
CHAOS, SOLITONS & FRACTALS

- **Paper Status**: Paper has been submitted.
- **Authors**: Sourin Chatterjee, Ahad N. Zehmakan, **Sujay Rastogi**

Automated Generation of Floorplans with Non-rectangular Rooms (Paper)　　　　　　*May, 2023*
GRAPHICAL MODELS

- **Paper Status**: Paper has been published.
- **Authors**: Krishnendra Shekhawat, Rohit Lohani, Chirag Dasannacharya, Sumit Bisht, **Sujay Rastogi**

Rectangular Floorplans with Block Symmetry (Paper)　　　　　　　　　　　　　*March, 2023*
COMPUTER-AIDED ARCHITECTURAL DESIGN RESEARCH IN ASIA (CAADRIA CONFERENCE)

- **Paper Status**: Paper has been presented at the conference.
- **Authors**: Shiksha, Krishnendra Shekhawat, **Sujay Rastogi**, Aishwariya Kondaveeti, Jose P. Duarte

Experience ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Amazon　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Hyderabad, Telangana*
SOFTWARE DEVELOPMENT INTERN - [TECHNOLOGY: REACT, TYPESCRIPT, JAVA]　　　　　　　*May 2023 - Ongoing*
'Feature Integration in myHR LiveChat'

- Developed the **read-receipt feature** in the **LiveChat** of myHR, which is a tool for **Amazon employees to contact HR support** for their needs.
- Provided **support to 18 languages** and **deployed** the feature to be **used by the entire Amazon workforce**.
- Currently, working on **standardizing the post-chat customer satisfaction survey** and **transferring it across business lines**.

Indian Institute of Management (IIM)　　　　　　　　　　　　　　　　　*Lucknow, Uttar Pradesh*
SUMMER RESEARCH INTERN - [TECHNOLOGY: PYTHON (NUMPY, PANDAS, SEABORN, STATSMODEL, SCIKIT-LEARN)]　　*June 2021 - August 2021*
'Stock Market predictions using ARIMA models'

- Worked under **Dr. Alok Dixit**, Department of Finance & Accounting on **time series modeling** and **forecasting** on the **NIFTY 50 TRI** data.
- Performed **data cleaning, exploratory data analysis and compared time series models** like the **AR**, **MA**, **ARIMA**, **SARIMA** and **ARCH**.

Indira Gandhi Center for Atomic Research (IGCAR)　　　　　　　　　　　　　*Kalpakkam, Tamil Nadu*
SUMMER RESEARCH INTERN - [TECHNOLOGY: PYTHON (NUMPY, MATPLOTLIB, SCIKIT-LEARN, SCIKIT-IMAGE, OPENCV)]　　*May 2021 - July 2021*
'Development of Computer Vision tools for Feature Recognition in Digital Microscopic Images'

- Worked under **Mr. B. Aashranth**, Scientific Officer 'D', under the Metallurgy & Materials group.
- Developed ML pipeline for data-driven classification tasks and **automated labeling and analysis of microstructural images**.
- Leveraged Computer Vision tools for **feature identification** and measurement to obtain a **77% matching score.**

Academic/Research Projects ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Epidemic Modeling
ALGORITHM LAB, AUSTRALIAN NATIONAL UNIVERSITY　　　　　　　　　　　　　　*January 2023 - Ongoing*

- Working with **Dr. Ahad Zehmakan** to model **virus spread in a social network** to find **interventions to reduce the population affected**.
- **Performed simulations** and **proposed & developed experiments** to reduce the virus spread by using network properties.
- Currently working on **developing strategies based on network properties and their physical significance** to devise more effective solutions.

Graph Algorithms for dimensioned floorplans (Video)

COURSE: DESIGN ORIENTED PROJECT *May 2022 - Ongoing*

- Working with **Dr. Krishnendra Shekhawat** to develop **Rule-based GPlan**, a data driven approach to GPlan.
- Implemented **dimensionality constraints** on **floorplans with corridors** and to **non-rectangular rooms**.
- Currently working on **graph transformation** to **reduce time complexity** for finding floorplan satisfying user given **symmetry constraints.**

Visualization of LCA data for product optimization using mixed reality (Certificate)

INDO-GERMAN CENTRE FOR SUSTAINABLE MANUFACTURING *September 2022 - January 2023*

- Worked in collaboration with **TU Braunschweig** on a mixed reality project **sponsored by Volkswagen & DAAD.**
- Discussed current **visualization techniques**, explored the use of extended reality in literature, and incorporated **visual analytics** in its UI.
- Developed a prototype to **visualize an e-bike** & **generate plots** to help in **choosing ideal material** for different parts for sustainable production.

Floorplans with minimum bends (Video)

COURSE: STUDY ORIENTED PROJECT *August 2021 - April 2022*

- Worked with **Dr. Krishnendra Shekhawat** to develop **GPlan**, a **software** that accepts **graph-based input** to generate architectural floorplans.
- Devised an **algorithm** to generate floorplans for **one connected graphs** and contributed to the generation of dimensioned floorplans.
- Implemented **block based symmetry** in floorplans for both one-connected & biconnected graphs.
- Helped in writing code using **NetworkX** and **Tkinter libraries of Python**.

Webpage Ranking Algorithm

COURSE: APPLIED STOCHASTIC PROCESSES *March 2021 - May 2021*

- Worked under **Dr. Anirudh Singh Rana**, to explore applications of **Markov Chains** in webpage ranking.
- Designed a **ranking algorithm** based on the PageRank Algorithm by **incorporating keywords of the metadata in sequencing links**.

Skills

Languages	Python, Java, C
Python Libraries	NumPy, Pandas, Matplotlib, Seaborn, Scikit-Learn, Scikit-Image, NetworkX, Tkinter, Statsmodels
Development	HTML, CSS, Javascript

Honors & Awards

ACM IKDD Uplink Intern *2022*

SIGKDD, ACM INDIA

- Among 10 selected students (out of 300+ applicants) for a **deep learning project** with the Knowledge DIscovery & Data Mining SIG of ACM India.

Department Topper *2021*

DEPARTMENT OF MATHEMATICS, BITS PILANI

- Department **rank 01** in **Department of Mathematics** at the end of sophomore year.

ISC Merit Award *2019*

NATIONAL BOTANICAL RESEARCH INSTITUTE

- Received merit scholarship from **CSIR-NBRI** for exemplary performance in **ISC exams**

Teaching

- **Teaching Assistant-** Machimne Learning (CS F320) *August 2023 - Ongoing*
  - Teaching **R programming** with a focus on using R libraries to implement machine learning algorithms to **50+ undergraduate students**.
- **Teaching Assistant-** Computer Programming (CS F111) *March 2023 - July 2023*
  - Teaching basic **concepts of Unix** and **programming in C** to **50+ students**.
- **Teaching Assistant-** Microprocessors and Interfacing (CS F241) *January 2023 - May 2023*
  - Developed study material & teaching **Assembly Language programming** to **40+ students**.

Position of Responsibilities

Microsoft Learn Student Ambassador (MLSA), BITS Pilani Chapter

CORE COMMITTEE MEMBER *August 2020 - Ongoing*

- Helped in **ideation and organisation** of **Cyber Houdini**, a capture the flag event in **APOGEE** (the annual college Techfest) 2021
- Arranged a workshop from Microsoft professionals on **Azure** & participated in **Indian Workshop on Applied Deep Learning** (IWADL)

Volunteering Activities

Peer Mentorship Programme (PMP)

STUDENT MENTOR *August 2020 - August 2021*

- **Mentored** a group of students from the **Fresher's batch** of **2020** to get acquainted with college and settle in online mode of education.
- **Solved** their **doubts** and **helped** them **in making academic decisions** like course selection & degree planning.