

# Saransh Gupta

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B.Tech + M.Tech in Quality Engineering Design  
and Manufacturing, IIT Kharagpur  
(Micro specialization in Artificial Intelligence: CGPA 9.55/10)

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## ACADEMIC QUALIFICATIONS

Year	Degree	Institute	CGPA/Marks
2022	B.Tech + M.Tech in Quality Engineering	IIT Kharagpur	7.92/10
2016	Class XII	Rajasthan Board of Secondary Education	85.4%
2014	Class X	Rajasthan Board of Secondary Education	89.50%

## RESEARCH EXPERIENCE

National Institutes of Biomedical Innovation, Health, and Nutrition [Jan '20 – Sep '20]

Guide: [Dr. Kenji Mizuguchi](#), Mizuguchi Lab, NIBIOHN, Osaka, Japan (Manuscript under review at [IEEE-JBHI](#))

- Led to research on the prediction of **Non-Small Cell Lung Cancer (NSCLC)** and identify its **potential drug targets**
- Extracted **412** essential genes out of **10,077** by applying **Boruta Feature selection** on their gene expression dataset
- Obtained **99%** accuracy upon validation and **100%** on the test dataset by using **CatBoost** model to predict the cancer
- Simulated a **Bayesian Network Model** for the **“Rho GDI signaling pathway”** to identify the drug targets
- Discovered methodology leads to an accurate treatment of the disease impacting **85%** of the lung cancer patients
- **Tools and Software:** Python, TargetMine, scikit-learn, smote, NetworkX, NumPy, pandas, Plotly, joblib

Safety Analytics and Virtual Reality Laboratory, IIT Kharagpur [May '19 – Jul '19]

Guide: [Dr. J. Maiti](#), SAVR lab, IIT Kharagpur, India

- Created **virtual environment** of fire in a hospital building using **Unity3D**, simulated in Oculus-rift to collect data
- Programmed **AI bots** in the virtual environment to simulate human behavior in case of fire inside a hospital building
- Impact of the research comprises safe evacuation and suggesting emergency exits from a building in case of fire
- **Tools and Software:** Python, Tableau, MS Excel, scikit-learn, matplotlib, seaborn, pandas, NumPy

## INTERNSHIP EXPERIENCE

Data Science Associate – Intern | ZS Associates Inc. [Jan '21 – Jun '21]

- Created an **AI-based Knowledge Graph** for **drug repurposing** which uses predicted relations between entities
- Developed a pipeline to extract texts from **PubMed** database, identifying the **entities** using **Selenium** and **PubTator**
- Implemented **Binary Classification** rules for **labeling functions** using **bio-verbs** and **co-occurrence** of entities in texts
- Generated a **labeled dataset** utilizing the labeling functions and **Snorkel** using **weak-supervised learning**
- Achieved an **F1 score of 0.77** in relation-classification by training **RoBERTa base** model on the labeled dataset
- Created another set of labeling functions for **relations' type classification** by using the results of Binary Classification
- Performed **text classification** using the labeled dataset and **CatBoost Model** for the relations' type classification
- Improved **F1 score from 0.15 to 0.64** on validation by conducting **hyper-parameter tuning** and **feature engineering**
- **Tools and Software:** Python, TensorFlow, Transfer Learning, Medline-Plus API, PubTator, Selenium, Snorkel

Data Science Intern | Sapio Analytics India PVT. LTD. [May '20 – Jul '20]

- Collaborated to build a web-based **Decision Support System** for the **prediction of COVID-19** at the **hyper-local level**
- Fabricated **SEIRD model** using Migration, Lockdown conditions, reducing **RMSE** up to **4.8%** by optimizing parameters
- Application was used by **The Govt. Of Telangana** to mitigate COVID-19 while maximizing the economic activities

## Computer Vision Intern | Swaayatt Robots PVT. LTD.

[Apr '20 – Jul '20]

- Worked towards automating the **bounding box tracking** in different conditions of Daylight and road semantics
- Programmed **SuperPoint** algorithm to extract the features of an image for Point Tracking and Visual Odometry
- **Tools and Software:** Python, pandas, NumPy, TensorFlow, PyTorch, OpenCV, matplotlib, Jupyter Notebook

## SKILLS

**Programming & Applications:** Python, C++, R, C, Image Processing, Computer Vision, Machine Learning

**Software:** Tableau, MATLAB, ANSYS, Solid works, Unity3D, R-Studio, SOLIDWORKS, Visual Studio, MS Excel

## ACHIEVEMENTS

### ▪ Academic Achievements:

- Pursuing a micro specialization in artificial intelligence with a **CGPA of 9.55** on a scale of 10
- Awarded Merit-based scholarship of **2200 Euros** by **The Aix-Marseille University, France** for the internship
- Among **Top 5%** out of all for the summer internship program at **The Institute of Science & Technology Austria**
- Got featured in the ISE Newsletter Autumn-2020 under the Department Spotlight of ISE fights COVID-19

### ▪ Internship Achievements:

- Awarded as **Intern of The Month** for my contribution as a Data Analyst at Sapio Analytics by the CEO
- Offered a position of Data Scientist as **Pre-Placement Offer** from Sapio Analytics PVT LTD

## COURSEWORK INFORMATION

- **Department Courses:** Probability and Statistics, Basic Biology, Programming and Data Structures
- **Micro-Specialization Courses:** Machine Learning, Artificial Intelligence, Deep Learning, Linear Algebra for AI and ML
- **MOOC Courses:** Machine Learning, Algorithms in programming, Virtual Reality, Computational Phenotyping

## COMPETITIONS / CONFERENCES

**International Conference on Human Interaction & Emerging Technologies: Future Applications** [Aug 2020]

- Virtually Presented the research paper on "**Development of a virtual reality-based fire training simulator and Machine Learning-based path guidance system: A case of hospital fire breakouts**" at Lausanne, Switzerland

**ML Summer School 2021 | Amazon | Virtual**

[Jul 2021]

- Qualified a competitive process consisting of coding and MCQ rounds to examine the understanding of Probability
- Got a chance to interact and learn from some of the Subject Matter Experts and Data Scientists at Amazon

**Jumpstart | Publicis Sapient | Virtual**

[Jul 2021]

- Cracked the aptitude round (**Level-1**) and Coding Round (**Level-2**) to be shortlisted for the on-campus conference

**Runners Up | Data Analytics and Business Case Study Event | Shaastra, IIT Madras**

[Jan 2020]

- Secured **2nd position** in the final in a **3 round** long competition on the prediction of the defaulters on credit cards
- Visualized key features governing target variable, removed outliers, imputed missing values
- Applied **XGBoost** followed by Grid Search Optimization to improve baseline accuracy from **0.59 to 0.82**

**Runners Up | Inter-Hall Data-Analytics competition | IIT Kharagpur**

[Feb 2019]

- Worked in the Visualization of data-set and then interpreting trends followed by different variables
- Applied **XGBOOST** followed by feature engineering and obtained **82.55%** on training and **80.66%** on the test data
- Awarded best in the category of best F1 Score Model, Overall stood second in terms of Business Case Study

## EXTRA-CURRICULAR ACTIVITIES

- Worked with the mechanical team of the **Autonomous Underwater Vehicle (AUV)**, IIT Kharagpur
- Managed a technical workshop on **SolidWorks** at Jadavpur University organized by **teamKART**, IIT Kharagpur
- Mentoring **four undergraduate students** of the same branch under the shade of Student Welfare Group
- Swimmer of the **Gold-Winning** water-polo team at Inter-hall general championship events – 2019
- Lead presenter of the **Gold-Winning** team at Inter-Hall Gardening competition – 2019
- Manager at KHOJ, the annual treasure hunt event conducted by The Azad hall of residence and TSG - IIT Kharagpur