Saransh Gupta

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EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2022	M.TECH Dual Degree 5Y	Indian Institute of Technology, Kharagpur	7.43/10
2016	XII(RBSE)	Rajasthan Board	85.4%

Work Experiences

Research Assistant | N.I.B.I.O.H.N, Osaka, Japan | Guided by Dr. Kenji Mizuguchi ***Duration: Jan 2020 - present***

- Worked with a high-dimensional data containing 10077 gene expressions with an objective to predict **The Non-small cell lung cancer** (**NSCLC**) using Machine Learning along with estimating the key features (genes) whose content affects the most for this type of lung cancer.
- Programmed **CUDA** enabled ML & DL algorithms like **CATBOOST**, **DBN** to predict the cancer with an accuracy **99% on the train & 98% test**.
- Implemented **Boruta Feature selection** technique to sample out 411 crucial genes out of all which are mainly responsible for this cancer.
- Used **Optuna** to fine tune the various parameters of the applied models which increased the accuracy drastically from **~82% to 98%.**
- Deployed **SMOTE** and **ADASYN** oversampling techniques to balance the data-set and **Z-test to remove the outliers** out of the data-set.
- **Tools & Softwares:** Python, Optuna, Boruta, WGCNA, PCA, tSNE, R, Pandas, Numpy, scikit-learn, SMOTE, ADASYN, Jupyter Notebook.

Deep Learning & Computer Vision Software Development Intern | Swaayatt Robots, India ***Duration: April – June 2020***

- Worked with large data-sets of images to build a pipeline which can automate the points tracking, segments the road to extract path.
- Programmed **SuperPoint algorithm**, a deep learning approach to extract the features of an image for Point tracking & Visual Odometry.
- Implemented Road segmentation using **PSPU-NET**, a deep learning approach to extract the road out of a path for an autonomous car.
- Trained & tested the **Linear Style Transfer** algorithm using tensorflow to change the semantics of the road & convert day-night in images.
- Incorporated Visual Odometry, Point tracking, road segmentation and style transfer into a single pipeline to directly deploy on the system.
- **Tools & Softwares:** Python, VGG, opencv, pytorch, tensorflow, numpy, pandas, github, Convolutional Neural Networks, Image processing.

Research Assistant | S.A.V.R, IIT Kharagpur, India | Guided by Dr. J. Maiti ***Duration: May - July 2019***

- Worked on the Development of a **virtual reality** based fire training simulator and Machine Learning based path guidance system with an objective to build a virtual environment to train people for safe evacuation from a hospital building in case of fire.
- Created virtual environment of a hospital building in **Unity3D**, tested in **oculus-rift** to collect data from human behavior in case of fire.
- Programmed the oculus rift controlled player along with the **AI-Bots** which will be following the player during the time of fire exit using **C#**.
- **Tools and Softwares:** Programming with C#, VR box, oculus rift, Unity3D, SolidWorks, python, numpy, pandas, MS-Excel.

Projects

Detection of Malaria using blood smears images with Deep Learning | Kaggle | Online self-Project ***Duration: November 2019***

- Trained a Deep Learning model using **CNN** on Malarial and Non-Malarial Pathological Slides to predict the Disease with an accuracy of **96**%.
- Used **Image processing** to blur, rotate, resize the image to increase the data-set content and improve the robustness of the model.
- **Tools and Softwares:** Python, pandas, numPy, tensorflow, Convolutional Neural Networks, Opencv, Image Processing.

Predict the type of Network Congestion | Data Analytics Event, IIT Kharagpur ***Duration: Jan - Feb 2019***

- Implemented SVM, Random-Forest Classifier, Regression, Decision Tree Classifier, **XGBOOST,** and Bayesian Optimization.
- Implemented Feature Engineering on the train data. Obtained **82.55%** train accuracy, **80.66%** test accuracy, MCC score of **0.742.**
- **Tools and Softwares:** Python, Statistics, Tableau, MS-EXCEL, Scikit-learn, MATPLOTLIB, seaborn, Pandas, numPy.

SKILLS & EXPERTISE

- Programming & applications: Python, C++, R, C, Arduino, Image Processing, Video Analytics, Machine Learning, Deep Learning.
- Software and Tools: Tableau, MATLAB, ANSYS, Solid works, Unity3D, R-Studio, MATLAB, SOLIDWORKS, Visual Studio, MS-EXCEL

COMPETITIONS/SCHOLARSHIPS

- **Selected for The A*Midex foundation scholarship from Aix-Marseille University worth around 2200 euros for the summer internship at Turning Center for Living Systems, Marseille, France.** ***Duration: May-July 2020***
- Invited to attend a **Global conference on Data Analytics** organized by Kaggle at **Dubai World Trade Centre**. ***Duration: March 2020***
- My Team of three Data science enthusiasts Awarded with **Silver** for the Data-Analytics event at IIT Madras. ***Duration: Jan 2020***
- My Team of twenty Data science enthusiasts awarded with **BRONZE** for the Data-Analytics event at IIT Kharagpur. ***Duration: Feb 2019***

POSITIONS OF RESPONSIBILITY

IIT KGP Student Mentorship Program | Student Welfare Group | Technology Students Gymkhana | IIT Kharagpur | From July 2019

- Mentoring four undergraduate students of the same branch under the shade of Student Welfare Group, IIT Kharagpur.

CERTIFICATIONS & COURSES

- Department Courses: Probability Statistics, Operations and Research, Programming and Data Structures, Optimization Heuristic Methods.
- Mooc Courses: Machine Learning, Data Analytics, Algorithms in programming, Deep Learning, 3D Simulations and Virtual Reality.

EXTRA CURRICULAR ACTIVITIES

- Swimmer at water-polo team of Azad-hall of residence, Inter-hall general championship events, TSG - IIT Kharagpur during March 2018.
- Presentation team member of Inter-Hall Gardening competition team at Azad-hall of residence, TSG - IIT Kharagpur during March 2019.
- Manager at KHOJ, the annual treasure hunt event conducted by The Azad hall of residence and TSG, IIT Kharagpur during August 2018.