Saransh Gupta

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ACADEMIC PROFILE

Year	Institution	Degree	CGPA
2022	Indian Institute of Technology Kharagpur	B. Tech. + M. Tech. (Engineering Product Design)	8.09 / 10.00

PUBLICATIONS

- S. Gupta *et al.*, "Integrative Network Modeling Highlights the Crucial Roles of Rho-GDI Signaling Pathway in the Progression of Non-Small Cell Lung Cancer," in *IEEE - JBHI*, 2022, **doi: 10.1109/JBHI.2022.3190038**
- Entity-aware Question-Answer Extraction for Shopping Guidance, **Amazon Machine Learning Conference - 2022**
- (Gupta et al.) Development of a virtual reality-based fire training simulator and machine learning-based path guidance system (working paper), **IHIET-AI, 2020**, Centre Hospitalier Universitaire Vaudois, **Lausanne, Switzerland**

INTERNSHIPS AND PROJECTS

Amazon Development Center (India) | Applied Scientist - Intern **Jan'22 – June '22**

Project - 1: *Build a demo tool to help in the navigation and exploration of the Pre-curated Question Bank (PCQB)*

- Created a dashboard using **streamlit** enabling a user to input their query and get relevant questions accordingly
- Integrated the frontend with the backend and a **BERT** based model to fetch relevant questions based on queries input
- Demonstrated the coverage of PCQB with respect to user queries using the query-question relevance feature

Project - 2: Generate *Pre-curated Question Bank (PCQB) Question and Answer extraction from articles*

- Developed a **Transformers** based two-step model for the Question Generation followed by the answer extraction
- Scrapped Texts, **People Also Ask (PAA)** questions and answers using certain queries related to E-Commerce domain
- Increased the size of training dataset by **20** times by paraphrasing the dataset using T5 Text to Text Generator model
- Achieved a **Perplexity score** of **82.3** on Question Generation by fine-tuning pre-trained **T5** model on the PAA dataset
- Attained an **F-1 score** of **0.79** on the answer extraction task by fine-tuning encoders of **T5-large** model on PAA dataset
- Deployed the two step model pipeline on the **streamlit** based demo web-application that accept user input as text

Tools and Software: streamlit, Python, PyTorch, Transformers, BeautifulSoup, BERT, T5 (text to text generator)

ZS Associates Inc. | Data Science Associate - Intern **Jan'21 – June '21**

Project - 1: *Extract biomedical text dataset, identify entities, and classify if there exists a relation between entities*

- Created a pipeline to extract texts from PubMed database, identifying the entities using **Selenium** and **PubTator**
- Implemented **Binary Classification rules**, devised **four** labeling functions using bio-verbs, co-occurrence of entities
- Generated a training dataset utilizing the four labeling functions in **Snorkel** by applying the **Weak Supervision**
- Achieved F1 score of 0.88 on the gold-standard dataset in relation-classification by training **RoBERTa base** model

Project - 2: *Identify the type of relationship between two entities if it exists from the results of the Project-1*

- Created a new set of **three** labelling functions for **relation-type identification** by using the results of the project-1
- Attained **F1 score** of **0.83** on the gold-standard dataset using **XGBoost** Model followed by feature engineering

Tools and Software: Python, TensorFlow, Transfer Learning, Medline-Plus API, PubTator, Selenium, Snorkel

Osaka University, Japan | Remote Research Assistant **Jan '20 – Dec '20**

Guide: Dr. Kenji Mizuguchi, Mizuguchi Lab, Osaka University, Osaka, Japan

Project: *Predict the Non-Small Cell Lung Cancer (NSCLC) using Machine Learning, identify its potential drug targets*

- Extracted **412** essential genes out of **10,077** by applying **Boruta** Feature selection on their gene expression dataset
- Obtained **F-1 score** of **1.0** on validation and **0.98** on test dataset by using the **XGBoost** model to predict NSCLC
- Predicted drug targets for the NSCLC by simulating a **Bayesian Network Model** on the Rho-GDI signaling pathway
- 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

ACHIEVEMENTS

- Featured as one of the **Top 30 Undergraduate Achievers** of IIT Kharagpur in the UG Achievers Directory 2020
- Conferred merit-based scholarship of **2200 €** by The A*Midex Foundation of **Aix-Marseille University, France**
- Received scholarship of **248 USD** for **Harvard College Project for Asian International Relations conference - 2022**
- Selected among **Top 5%** out of all for the summer fellowship at **The Institute of Science & Technology Austria**
- Got featured in the ISE Newsletter Autumn-2020 under the Department Spotlight of **ISE fights COVID-19, 2020**
- Awarded as **Intern of The Month** for my contribution as a Data Analyst at Sapio Analytics by the CEO in July 2020

COMPETITIONS / CONFERENCES

- Annual Amazon Machine Learning Conference (AMLC) – Bengaluru, Karnataka **[Aug 2022]**
- 23rd World Business Dialogue, Creation Lab at Evonik - Cologne, Germany **[Jun 2022]**
- International Conference on Human Interaction & Emerging Technologies: Future Applications **[Aug 2020]**
- Young Data Scientists annual meetup at Kaggle - days, Dubai World Trade Centre **[Mar 2020]**
- Winner | Databuzz(Data Analytics Competition) DoMS IIT Madras **[Jan 2020]**

Problem Statement: *Prediction of the defaulters on lending credit cards to minimize loss incurred to the banks*