Utkarsh Patel

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Education

May 2023 **Indian Institute of Technology Kharagpur** *Kharagpur, India*
BTech and MTech in Electronics and Electrical Communication Engineering | CGPA 9.48/10
Minor in Computer Science and Engineering

Achievements

2022 **Department Rank 1** among the Dual Degree (VIPES) students of the Department of E&ECE

2021 Secured **Global Rank 70** among 12,000+ contestants in **Google Kick Start** (Round C)

2021 Qualified for Round 2 of **Facebook Hacker Cup**

2019 Secured **department change** to E&ECE by acquiring **9.69** CGPA at the end of the first year

Research Experience

Feb 2021 – Ongoing **Ad hominem Fallacies in the Wild** | *Guides: Prof. Mainack Mondal and Prof. Animesh Mukherjee*
- Implemented explainable models to detect **ad hominem** fallacies and provide linguistic insight into their triggers
- Achieved state-of-the-art results on sparsely annotated datasets using **SS-GAN** schema applied over **BERT**
- Performed network studies on the users to understand user dynamics in debate portals and social media sites
- Validated our in-the-wild predictions by performing crowdsourced surveys, achieving macro-F1 up to **0.94**

Aug 2020 – Dec 2020 **Detection of Autism Spectrum Disorder** | *Guide: Prof. Debasis Samanta*
- Worked on the **ABIDE** dataset to extract and process resting-state functional MRI data using **nilearn**
- Used correlation-based approach to determine functional connectivity between regions of interest
- Achieved test accuracy of **0.68** and **0.65** using **Support Vector Machines** and **K-Nearest Neighbors**

Projects

Winter 2021 **Facebook Scraper** | *Web Scraping*
- Developed a web crawler to scrape posts, comments and replies from public Facebook pages
- Used **selenium** to automate the browsing and **Beautiful Soup** for parsing the page source

Autumn 2021 **Jarvis: Chatbot for Customer Support** | *Natural Language Processing*
- Implemented a **Seq2Seq** architecture based chatbot with **Luong** attention mechanism in **PyTorch**
- Trained the model on **Customer Support on Twitter** dataset with **teacher forcing** and **gradient clipping**

Autumn 2021 **User Authentication using Keystroke Dynamics** | *Machine Learning*
- Implemented an **Artificial Neural Network** to authenticate users using keystroke dynamics of their mood data
- Extracted hold time and latency values for different keys and used them as feature vectors for classification

Spring 2021 **Create-Debate Scraper** | *Web Scraping*
- Developed a web crawler to scrape all the debates from CreateDebate.com using **Beautiful Soup**
- Used **NetworkX** to construct graphs representing the nested structure of the comments in the threads

Winter 2020 **Targeted Aspect-based Sentiment Analysis** | *Natural Language Processing*
- Transformed the task to sentence-pair classification by constructing auxiliary sentences from target-aspect pairs
- Fine-tuned **BERT** on **SentiHood** dataset, achieved aspect F1-score 0.90 and sentiment AUC **0.98**

Technical Skills

Languages C/C++, Python, SQL, MATLAB, MIPS, LaTeX

Tools Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch, Selenium, Beautiful Soup

Relevant Coursework

Algorithms, Computer Architecture, Operating Systems, Computer Networks, Database Management Systems, Probability and Stochastic Processes, Machine Learning, Natural Language Processing