Utkarsh Patel

3rd Year Undergrad
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Interests

Deep Learning · Natural Language Processing · Algorithm Design · Graph Theory · Analog Circuit Design

Education

- **Indian Institute of Technology Kharagpur** *Kharagpur, India*
  Candidate for Bachelor and Master of Technology (Dual Degree) *Jul 2018 - Present*
  - **Major**: Electronics & Electrical Communication Engineering — CGPA 9.54 / 10.0
  - **Minor**: Computer Science and Engineering — CGPA 10.0 / 10.0
- **Shah Faiz Public School** *Ghazipur, India*
  Central Board of Secondary Education
  - **Higher Secondary**: 94.8% — May 2017
  - **Secondary**: CGPA 10 / 10 — May 2015

Research Experience

- **Functional Connectivity MRI Classification of Autism Spectrum Disorder** *IIT Kharagpur*
  Guide: Prof. Debasis Samanta *Aug 2020 - Present*
  - **Research Focus**: Application of machine learning algorithms to classify autism spectrum disorder (ASD) patients and typically developing (TD) participants.
  - **Data Collection**: Using **resting-state functional MRI** (rs-fMRI) data from multi-site data repository **ABIDE** (Autism Brain Imaging Data Exchange).
  - **Functional Brain Networks**: Using system-level graph analysis for evaluating brain networks (default-mode, fronto-parietal, somatomotor, visual and cerebellar networks) and functional connectivity analysis for extracting features.
  - **Model**: Identifying important features from machine learning algorithms and implementing and training a deep neural network for the classification problem.
  - **Testing**: Testing the deep neural network on examples of different age groups and different brain maps (CC400, CC200, AAL, HOA, TT, EZ, Dosenbach).

Relevant Coursework

- **Computer Science**: Algorithms (+ lab); Programming and Data Structures (+ lab)
- **Deep Learning**: Natural Language Processing*; Convolutional Neural Network*; Hyper-parameter Tuning, Regularization & Optimization Techniques; Neural Networks and Deep Learning
- **Electronics and Communication Engineering**: Digital Electronics (+ lab)*; Analog Communication (+ lab)*; RF & Microwave (+ lab)*; Digital Speech Processing; Analog Electronics (+ lab); Control Theory*; Signals & Systems; Semiconductor Devices (+ lab)
- **Mathematics**: Graph Theory; Probability and Stochastic Processes; Matrix Algebra

* *denotes ongoing courses*

Scholastic Achievements

- 2020: Holding **Department rank 1** among 53 dual degree students at the end of 4th semester.
- 2017: Secured **2nd position** in the district in All India Senior School Certificate Examination.

Technical Skills

- **Programming Languages**: Python, C/C++, Octave, MySQL
- **Libraries / Frameworks**: TensorFlow, Keras, sklearn, Pandas, NumPy, C++ STL
- **Softwares / Platforms / OS**: Google Cloud, MATLAB, LTSpice, Jupyter, Git, LaTeX, Windows, Ubuntu
- **Competitive Programming**: CodeForces