Utkarsh Patel

3rd Year Undergrad
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Interests

Deep Learning · Machine Learning · Algorithm Design · Graph Theory

Education

- **Indian Institute of Technology Kharagpur** *Kharagpur, India*
  Candidate for Bachelor and Master of Technology (Dual Degree) *Jul 2018 - Present*
  - **Major**: Electronics and 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

- **Identification of Autism Spectrum Disorder using Deep Learning** *IIT Kharagpur*
  Guide: Prof. Debasis Samanta *Aug 2020 - Present*
  - Worked on the ABIDE dataset to extract and process fMRI data for various brain atlases.
  - Used resting state functional connectivity analysis to build the connectivity matrices.
  - Implemented various machine learning classification algorithms to classify subjects as autism (ASD) patients and typically developing (TD) participants.
  - Used SVM and MLP classifier to achieve test accuracy of 0.67 and 0.62 respectively on CC200 atlas.
  - Currently using SVM-RFE algorithm to extract top 1000 features from the connectivity matrix and training a deep neural network on the extracted features.

Key Skills

- **Programming Languages**: Python, C/C++, Octave, MySQL
- **Libraries / Frameworks**: TensorFlow, Keras, sklearn, Pandas, NumPy, C++ STL
- **Machine Learning / Data Analysis**: Deep learning, including CNNs and RNNs; Machine learning, including SVM, KNN, Fuzzy Rules, Decision Trees and Bayes
- **Softwares / Platform**: Google Cloud, MATLAB, LTSpice, Jupyter, Git, LaTeX

Relevant Coursework

- **Computer Science**:
  Scalable Data Mining*; Algorithms (+ lab); Programming and Data Structures (+ lab)
- **Deep Learning**:
  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.