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 correlation-based approach to extract functional connectivity between ROIs.
  - Implemented various machine learning classification algorithms to classify subjects as autism (ASD) patients and typically developing (TD) participants. SVM and MLP classifier achieved test accuracy of 0.67 and 0.62 respectively on CC200 atlas.
  - Currently developing 1-D Convolutional ResNet architecture to extract the functional connectivity features from fMRI data, training a deep neural network for classification and comparing results with correlation-based approach.

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**:
  Machine Learning*; Scalable Data Mining*; Algorithms (+ lab); Programming and Data Structures (+ lab)
- **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**:
  Probability and Stochastic Processes; Matrix Algebra
- **Online Courses**:
  Deep Learning Specialization; Graph Theory

* *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.