Utkarsh Patel

3rd Year Undergrad
utkarsh512 utkarshiitkgp

https://utkarsh.me/
utkarshpatel@iitkgp.ac.in
+91-95-4762-1111

Interests

Deep Learning · Machine Learning · Big Data · 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 data set to extract and process resting state functional MRI data.
  - Used correlation-based approach to determine functional connectivity between ROIs.
  - Implemented various machine learning classification algorithms to classify subjects as autism (ASD) patients and typically developing (TD) participants. Achieved test accuracy of 0.68 and 0.65 using SVM and KNN classifier respectively.
  - 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.

Term Projects

- **Machine Learning**
  Component to course CS60050 — Machine Learning — *Autumn 2020*
  - Implemented Regression Decision Trees for predicting percentage increase in Covid-19 cases worldwide.
  - Implemented Naive Bayes classifier for estimating patients' stay in a hospital.
  - Implemented SVM and MLP classifier for predicting biodegradability of chemicals from their molecular description.

Key Skills

- **Programming Languages**: Python, C/C++, Java, Scala, MySQL
- **Libraries / Frameworks**: TensorFlow, Keras, Scikit-learn, Pandas
- **Machine Learning / Data Analysis**: Deep learning, including CNNs and RNNs; Machine learning, including SVM, KNN, Fuzzy Rules, Decision Trees and Bayes
- **Softwares / Platform**: Apache Hadoop, Apache Spark, MATLAB, Git, LaTeX

Relevant Coursework

- **Computer Science**:
  Machine Learning; 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

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.