

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 a large multisite 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 using functional connectivity analysis for extracting features.
 - **Model:** Identifying important features from machine learning algorithms and building 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).

COURSE PROJECTS

- **Cat or Not** 📄 deeplearning.ai
Deep Learning Application on Image Classification Problem Jul 2020
 - Built a deep neural network to classify images as a cat image or a non-cat image.
 - Coded the **Forward Propagation** and the **Backward Propagation** from scratch to train the model.
 - Used **Batch Gradient Descent** algorithm to get optimal weights and biases.
 - Achieved **80%** accuracy on test set after training the model.

RELEVANT COURSEWORK

- **Computer Science:**
Algorithms (+ lab), Programming and Data Structures (+ lab)
- **Deep Learning:**
Natural Language Processing*, 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, PyTorch, sklearn, Pandas, NumPy, Matplotlib, PIL, SciPy, C++ STL
- **Softwares / Platforms / OS:**
Google Cloud, MATLAB, LTSpice, Jupyter, Git, L^AT_EX, Windows, Ubuntu
- **Competitive Programming:**
CodeForces