Prakhar Mittal
B.Tech Electrical Engineering (2019-23)
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Projects

Image to LaTeX Converter

(ITSP 2019-20, IIT-Bombay)

- Built a Deep Learning model for generating LaTeX expression for a given mathematical expression uploaded in the form of an image.
- Used the Django framework to create a web application that allows the user to input the mathematical expression, and yield a compilable LaTeX code for the same.
- Seamlessly converted the equation to LaTeX in order to ease documentation for research work/homework/ wherever the user wishes to implement.
- Also provided a compiled pdf file to show how the predicted code would look when compiled with a TeX editor, downloadable from the website using djano-tex.

Link to Project `https://github.com/hawkeye-ITSP/webpage`

Text Sentiment Analysis

(ITSP 2019-20, IIT-Bombay)

- Created a tool which could classify any sentence on the basis of it's sentiment into positive or negative and help automate classification of feedbacks inside the institute.
- Used RNN and NLTK library in python for preprocessing and labelling of sentences.
- Learned and implemented Naltural Language Processing algorithms, primarily, to deal with sentences containing words with both positive as well as negative sentiment.

Link to Project `https://github.com/kenzz17-ITSP/webpage`

ML-Gym

(SoC 2019-20, IIT-Bombay)

- Worked in a team of 6 under a senior mentor to develop a platform where a ML user can see how an algorithm is behaving and can tweak its parameter to see result change in real time.
- Manually implemented training and testing for Gaussian-SVM in python and developed a Django-HTML architecture for applying the same.
- The website will provide the user with the flexibilty of choosing training algorithms for his/her uploaded dataset as well as to choose and compare accuracy between any hyperparameter combination of their choice for the algorithm.

Link to Project `https://github.com/codeLAlit/MLGYM`

Technical Skills

Programming Python, C++, Bash

Web Development HTML, CSS, Bootstrap, JavaScript, Django

Office Tools LaTeX, git, AutoCAD, SolidWorks

Scholastic Achievements

- Secured **All India Rank 127** (among 245,000) in JEE Advanced, considered one of the toughest entrance exams in the world. *(2019)*
- Secured **All India Rank 121** in JEE Mains out of more than 1 million candidates. *(2019)*
- Scored **438 marks** out of 450 in **BITSAT** *(2019)*
- Awarded scholarship in the **KVPY Fellowship Programme**, given only to around 1500 students throughout the country. *(2019)*
- Qualified for **INPHO**, Indian National Physics Olympiad, having placed in the **Top 1%** nationwide, out of 50,000 candidates in **NSEP**, National Standard Examination in Physics. *(2018)*
- Qualified for **INCHO**, Indian National Chemistry Olympiad, having placed in the **Top 1%** nationwide, out of 70,000 candidates in **NSEC**, National Standard Examination in Chemistry. *(2018)*

Co-Curricular Courses

- **Machine Learning** MOOC by Andrew NG on coursera.org *(Summer,2020)*
- **Deep Learning** MOOC by deeplearning.ai on coursera.org *(Summer,2020)*
- **Basics of Web Development** from codecademy.com *(Summer,2020)*
- **Introduction to LaTeX** by Learner's Space, IIT Bombay *(Summer,2020)*

Course Projects

Voltage Source Design

(Joseph John, EE-113 Introduction to Electrical Engineering Practice)

- Worked as a team of two to create a Regulated Voltage Supplier using basic knowledge about transformers, ICs, diodes and basic electrical elements.
- The device would take in an AC supply from any plug point, and output a regulated supply of two constant voltage supplies, 5V and 12V.
- Used resistors, capacitors, diodes and ICs to design a suitable circuit and realized it on a PCB.

Basics of Control Systems

(Debraj Chakraborty, EE-113 Introduction to Electrical Engineering Practice)

- Engineered a linear control system pipeline in MATLAB Simulink for instant motion and alignment of a rod (imitating the role of a satellite dish) in the desired direction.
- Also studied the effect of various starter signals, and feedback loops, optimized them, ultimately leading to the intuitive understanding of PID controllers.

Extra Curricular Activities

- Engineered a **Remote Controlled bot** capable of negotiating different obstacles through a 100m long track. Stood **6th** out of more than 100 other teams.
- Successfully completed a year long **NSO** programme in Lawn Tennis, organised by IIT Bombay