



Sunil Kumar Meena
Computer Science & Engineering
Indian Institute of Technology Bombay

180050107
UG Second Year
Male
DOB: 2001-02-07

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	8.93
Intermediate/+2	RBSE	AZAD BAL VIDHYA MANDIR SR SEC	2017	97.40
Matriculation	RBSE	AZAD BAL VIDHYA MANDIR SR SEC	2015	94.50

SCHOLASTIC ACHIEVEMENTS

- Achieved **All India Rank 347** in **JEE Advanced** out of 172,000 candidates (2018)
- Secured **All India Rank 646** in **JEE Main** out of 1.2 million candidates (2018)
- Achieved **2nd Rank** in Samarpan Talent Appreciation and Reward Exam (2017)
- Received **Distinction Certificate** for securing 80 - 90 % marks in STSE Exam (2014)

INTERNSHIPS

Akkarbakkar App — *Full Stack Development*
Yoso Media Pvt. Ltd.

Winter 2019

- Implemented a controller in Rails app to **authenticate** users and handle **sessions** using **devise** gem
- Integrated **cancancan** gem to handle **permissions** regarding accessing and updating data based on user's role
- Implemented direct image upload to aws cloud along with some image operations using **shrine** and **aws** gems
- Created a FrontEnd **React** app involving heavy use of **redux**, **redux-forms** and **react-router**
- Implemented several **graphql mutations** and queries over **mongoose** models in Rails app and Integrated **react-apollo** in React app to send request regarding query or mutation to graphql endpoint of Rails server

KEY PROJECTS

Chatbot — *Deep Learning*
SelfProject

Aug - Sep 2019

- Designed a **Seq2Seq Generative** conversation model using Gated Recurrent Unit (**GRU**) in **PyTorch**
- Preprocessed and prepared data using an **embedding layer** for encoding words into feature space
- Implemented an **encoder RNN** using biDirectional GRU and a **decoder RNN** using uniDirectional GRU along with **luong attention layer** for incorporating context
- Successfully trained the Chatbot using **teacher forcing**, **gradient clipping**, and **masking** techniques

Question Bank Application — *Web Development*
Guide: Prof. Amitabha Sanyal | Course Project

Oct - Nov 2019

IIT Bombay

- Developed a **django** application to store question banks without any limit on depth of question-modules
- Implemented **user-authentication**, search-filters, question addition by **INI** file and several **sqlite3** queries
- Integrated **MathJax** and **LaTeX** for support of math symbols and equations in webpage and pdf respectively
- Implemented **paper generation** feature to export quizzes and download them as a pdf

Lyrics Generator — *Machine Learning*
WnCC Seasons of Code

May - July 2019

IIT Bombay

- Designed a **Word Level Based LSTM** model to generate song lyrics in English from a given seed word
- Implemented **recurrent neural network** and **Long Short Term Memory Cell** from scratch using only **numPy** library and designed a **training model** for this network
- Preprocessed and cleaned a data set of over 55000 songs and formatted the songs using **csv** module
- Developed a simple model of **word embeddings** using pretrained Global Vectors for Word Representation (**GloVe**) with 100 dimensions to process words in neural network

- Developed a full version of Go Game involving 2htdp/universe library for **GUI** and **event headling capacities**
- Implemented all rules like **ko**, **suicide** and used **breadth-first search** to count the Territories of players
- Implemented **Monte Carlo Tree Search** to generate Computer Move using **Benson's algorithm** for giving weights to nodes and UCB selection function for selecting nodes

- Implemented API for a **percolation system** of $n \times n$ grid using **Weighted Quick Union-Find** Algorithm
- Designed **dequeue** and **randomized queue** APIs with worst-case constant time except permuting queue
- Implemented **A* search algorithm** using **Minimum Priority Queue** to solve **8-puzzle** Problem
- Designed Algorithm for **range search** in unit square by first using **red-black trees** and then using **2d-trees**

OTHER PROJECTS

- **Handwritten Digit Recognition:** Implemented a **Feed-Forward Neural Network** in MATLAB and successfully trained it on MNIST data set using **regularized logistic regression**
- **Image Denoising:** Implemented an algorithm to minimize Salt and Pepper noise in images using SciPy and NumPy libraries along with applying **K-Means Clustering** for Image Compression
- **Cryptography:** Implemented a decrypter for the **mono-alphabetic cipher** using dictionary closure and bi-gram, tri-gram, and word frequency analysis using list comprehension macros in Racket
- **Language Interpreter:** Designed a basic interpreter for a small rule-based language given its grammatical rules in **Racket (Scheme)** using **Environment Model of Execution**
- **Decision Trees:** Trained a prediction model using decision trees with **entropy reduction** as a prime criterion

TECHNICAL SKILLS

Proficient In	C++, Python, Java, Javascript
Experience with	HTML, CSS, Bash, Racket, Prolog, Ruby
Web Development	Django, Rails, ReactJS, Redux, GraphQL
Softwares	MATLAB, Git, Jupyter-Notebook, SolidWorks, AutoCAD
Machine Learning	Pytorch, NumPy, SciPy, Pandas, Matplotlib

COURSES UNDERTAKEN

Computer Science	Data Structures and Algorithms, Discrete Structures, Software Systems Lab, Design and Analysis of Algorithms*, Digital Logic Design*, Logic for Computer Science*, Computer Networks*, Abstractions and Paradigms in Programming, Computer Programming and Utilization, Data Analysis and Interpretation
Mathematics	An Introduction to Number Theory and Cryptography*, Linear Algebra, Calculus, Differential Equations
Others	Introduction to Electrical and Electronics Circuits*, Economics*, Quantum Physics, Basics of Electricity and Magnetism, Engineering Graphics and Drawing, Physical Chemistry, Physical Biology, Organic and Inorganic Chemistry

**to be completed by April 2019*

EXTRACURRICULARS

- Part of the **70th Republic Day Parade** performed at IIT Bombay Gymkhana Ground (2019)
- Successfully Completed Big Data, Bioinformatics, and Proteomics (**BDBP Camp**) (2019)
- Participated in **Annual Training Camp 412** under 2 Maharashtra Engineer Regiment National Cadet Corps along with completing Rifle training and Physical training (2018)
- Engineered an app-controlled bot car with **Bluetooth connectivity** and conceptualized some **design** changes to tackle particular hurdles in **XLR8** competition organized by Robotics Club IITB (2018)
- Delivered a **Career Guidance Session** to 50+ students of Brihanmumbai Municipal Corporation School during Career Counselling Campaign conducted by Abhyuday IITB (2018)
- Stood **first in Kho-Kho Championship** at Intra-school Sports event in class 12th along with being Captain of the team (2017)