SHREYA LADDHA

THIRD YEAR UNDERGRADUATE

IIT Bombay, India

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Education

Indian Institute of Technology, Bombay	*CPI - 9.09*
B.TECH IN ELECTRICAL ENGINEERING WITH MINOR IN COMPUTER SCIENCE AND ENGINEERING	*2018 - 2022*
S.J. Public School, Jaipur	*96.4 %*
INTERMEDIATE/+2	*2018*
Maheshwari Girls Public School, Jaipur	*10 CGPA*
MATRICULATION	*2016*

Publications

AIAA SciTech Forum 2021	Survey and Analysis of Payloads for Missions on PSLV's Orbital Platform **[See paper]**
NCSSTA 2020	Sanket - Technology Demonstration of Antenna Deployment System on PS4-OP **[See Paper]**

Work Experience

Praxis Business School [Code] [Report] *Remote*

NATURAL LANGUAGE PROCESSING RESEARCH INTERN *May 2020 - Aug 2020*

- Designed algorithms for summarizing the polarity of customers' opinions towards different product features based on their reviews
- Developed feature extraction pipeline to mine frequently mentioned product features, using Apriori algorithm and pruning techniques
- Fabricated an opinion mining pipeline for opinion extraction using dependency parsing, and scoring the sentiments using VADER

Avrio Energy Pvt. Ltd. *Remote*

PYTHON / FIRMWARE DEVELOPMENT INTERN IN ELECTRONICS *May 2020*

- Explored libraries like spidev, pigpio, bcm2835 and gpio for establishing SPI communication on Raspberry Pi using GPIO (non-SPI) pins
- Successfully established I2C interface between RPi and ADE7880 using python libraries and learned about HSDC interface of ADE7880

Edelweiss Financial Services Ltd. *Mumbai*

DATA ANALYTICS INTERN *Dec 2019*

- Acquired knowledge about credit analysis of loans especially SME Business Loans while working with a team of 15+ members
- Analysed banking & financial details provided by customers, and developed 600+ features to be used by loan default prediction model

Key Projects

Rover Path Finder [Code][Demo] *Microsoft Engage 2020*

MARS COLONIZATION PROGRAM *Jun 2020 - Jul 2020*

- Designed a web application to find the shortest path from the rover to the destination in a grid containing user defined obstacles
- Implemented and optimized path finding algorithms like Breadth First Search for tracing the route having the least distance
- Innovated on PathFinding.js by introducing features like multiple destinations, multiple rovers, dynamic grid size and dynamic statistics

Smart UI [Code] *IIT Bombay*

TECHFEST, IIT BOMBAY *Dec 2020 - Jan 2021*

- Developed a web application for generating HTML output and JSON file containing details of all elements in a wireframe image
- Applied a three stage pipeline to detect & classify components, extract class based attributes and render JSON output into HTML template
- Employed OCR techniques using tesserocr and keras-ocr to extract text and related attributes of the detected components

Sanket: Antenna Deployment System *IITB Student Satellite Program*

TECHNOLOGY DEMONSTRATION OF ANTENNA DEPLOYMENT SYSTEM ONBOARD PSLV STAGE 4 ORBITAL PLATFORM *Jul 2019 - Present*

- Proposed and analyzed Inflatable Antenna Systems as a technology demonstration payload for the mission as a part of Payload Team
- Surveyed and finalised space grade components to be used on board within design constraints from the mission requirements
- Designed PCBs using Eagle CAD for the antenna deployment system and the peripheral circuit of a single-chip transceiver CC1125

Advitiy: Communication Subsystem
ADVITIY IS THE NEXT STEP AFTER PRATHAM: FIRST STUDENT SATELLITE OF IIT BOMBAY

IITB Student Satellite Program

Feb 2019 - Jun 2019

- Developed Link Budgets for Uplink, Downlink, and Beacon of the satellite after studying link budgets for various past successful missions
- Determined the Modulation Methods and System Baud Rate for communication by analyzing link margins at different Bit Error Rates
- Successfully received SSTV images broadcasted from ISS and APT weather satellite images from NOAA satellite using a handheld receiver

Fake News Classifier [Code]
COURSE PROJECT - ML FOR REMOTE SENSING

IIT Bombay

May 2020 - Jun 2020

- Developed a classifier model from scratch with neural network architecture as backbone, using LSTMs and CNNs in Tensorflow
- Created the training dataset using datasets from diferent sources like Kaggle and GitHub; and cleaned it using NLTK and Regex libraries
- Used Glove google API as pre-trained word embedding for the model and achieved over 90% accuracy on US 2017 elections dataset

Iris Recognition [Code]
COURSE PROJECT - DIGITAL IMAGE PROCESSING

IIT Bombay

May 2020 - Jun 2020

- Designed an Iris recognition algorithm using phase components in 2D Discrete Fourier Transforms of given images in CASIA dataset
- Preprocessed images using iris localization and normalization techniques to remove parts other than iris from an eye image
- Evaluated matching score using BLPOC (Band Limited Phase Only Correlation) function and identified genuine and impostor attempts

AquaGerator
INSTITUTE TECHNICAL SUMMER PROJECT

ITC, IIT Bombay

Jun 2019 - Jul 2019

- Designed a prototype of a sustainable electromechanical system that converts water vapour in the atmosphere into drinkable water
- Explored thermodynamics of water in order to select appropriate equipment to implement the mechanical refrigeration cooling system
- Conducted experiments and generated 5-7 litres of water in over 20 hours and presented the prototype in front of 300+ people

Digital Smiley Display [Report]
COURSE PROJECT - INTRODUCTION TO ELECTRONICS

IIT Bombay

Mar 2019 - Apr 2019

- Conceptualized and designed a logic circuit to display a smiley face on 8*8 LED matrix by controlling the frequency of LM555 timer
- Devised the circuit using a down ripple 4 bit counter, 3 to 8 bit inverting decoder and an array of logic gates to control the voltage

Line Follower
ELECTRONICS AND ROBOTICS CLUB

IIT Bombay

Mar 2019 - Apr 2019

- Designed an autonomous bot which follows a white line over black background and pursues predefined path in case of cross-overs
- Fabricated IR sensor circuit to detect the path and give input to Arduino Uno for control of DC motors for maneuvering of bot

FM transmitter
HAM RADIO CLUB

IIT Bombay

Mar 2019

- Developed an FM transmitter circuit using a bipolar junction transistor and tuned the carrier frequency using the tank oscillator
- Successfully tested the circuit by receiving a test signal on a laptop using an RTL-SDR module and Software Defined Radio Console

Positions of Responsibility

Subsystem Head, Communication Subsystem
IITB STUDENT SATELLITE PROGRAM

IIT Bombay

Jan 2020 - Present

- Spearheading a team of 10 members to conceptualize and develop a quality assured Communication Subsystem of a satellite
- Executed a three stage recruitment process to test skills, approach and team work of the applicants; selected 8 out of 50+ candidates
- Conducted a Ground Station Workshop for more than 50 students of 15+ colleges to help establish ground stations in their colleges

Events Coordinator, Robowars
TECHFEST: ASIA'S LARGEST TECHNICAL FEST

IIT Bombay

Jan 2020

- Involved in execution of India's Largest International Robowars with a budget of over 4 Million with a footfall of over 175k people
- Addressed and managed 100+ participants from 10+ International teams and 30+ Indian teams for smooth conduct of the events
- Supervised a team of 10+ organizers responsible for the planning and successful execution of 280+ events in the fest

Achievements

Dec 2020	**Third** in Site Developer Competition, Techfest, IIT Bombay
Aug 2020	**Top three member team**, Microsoft Engage 2020
Jul 2020	**Rank 164** out of 6061 team, Stage-I, Flipkart's Grid 2.0 Hackathon
Aug 2019	**Special Mention** for AquaGerator, Institute Technical Summer Project, IIT Bombay

Skills

Languages	English, Hindi, Korean (Beginner)
Programming	Python, Embedded C, C++, Javascript, Java, Julia, HTML, CSS
Development	Tensorflow, Node.js, Docker, Kubernetes, MongoDB, Redis, Ionic, MySQL
Softwares/Tools	Postman, ns-3, Wireshark, EAGLE, MATLAB, Proteus, Quartus, ArduinoIDE, SDR Console, Saturn PCB Toolkit

Relevant Courses

Electrical	Digital Signal Processing, Electronic Devices & Circuits, Data Analysis and Interpretation, Analog Circuits, Digital Systems, Signals & Systems, Electrical Machines & Power Electronics, Network Theory
Computer Science	Digital Image Processing, Computer Networks, Logic for Computer Science, Data Structures and Algorithms, ML for Remote Sensing-I, ML for Remote Sensing-II
Coursera	Google Cloud Platform Big Data and Machine Learning Fundamentals
edX	Computer Vision and Image Analysis, Applied Deep Learning Capstone Project
Udemy	Deep Learning A-Z: Hands on Artificial Neural Networks

Extracurricular Activities

Sports
- Completed 80 hours of training in Chess under the National Sports Organisation
- Awarded the Best Chess Player of the year (2014-15) Award in the school

Miscellaneous
- Presented Pratham and Advitiy as a member of Student Satellite Team during ITC expo in front of 300+ people
- Hosted the School Annual Function 2016, SJPS in front of an audience of 250+ people
- Mentored a team of four members in XLR8 2019 to successfully make a bluetooth controlled bot