



Shreya Laddha  
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Examination	University	Institute	Year	CPI/%
Graduation	IIT Bombay	IIT Bombay	2021	9.17
Intermediate/+2	CBSE	S.J. Public School	2018	96.40
Matriculation	CBSE	Maheshwari Girls Public School	2016	10.00

Pursuing **Dual Minor in Computer Science and Engineering (CSE)**, and **Artificial Intelligence and Data Science (C-MInDS)**

## PUBLICATIONS

- Jagdale K., **Laddha S.**, et al. “Sanket - Technology Demonstrations of Antenna Deployment System on PSLV Stage-4 Orbital Platform” extended abstract presented at **NCSSTA 2020**, Trivandrum
- Ranade A.R., **Laddha S.**, et al. “Survey and Analysis of Payloads for Missions on PSLV’s Orbital Platform” presented at **AIAA SciTech Forum 2021**, Nashville, TN
- Agarwal A., **Laddha S.**, et al. “Knowledge Graph - Deep Learning: A Case Study in Question Answering in Aviation Safety Domain” manuscript under review for **Language Resources and Evaluation Conference 2022**, Marseille

## INTERNSHIPS

### Summer Analyst

[Jun '21 - Jul '21]

Goldman Sachs

- Developed a **vector-based search** framework built on **similarity** between documents and queries
- **Fine-tuned** a **BERT** model to get text embeddings & merged it with **Elasticsearch** vector queries
- Compared BERT- and **Lucene**-based search results on a manually compiled dataset of **5k** documents

### Software Engineer

[Dec '20 - Jan '21]

ZLevelApps

- Designed a **RESTful API** for group chat backend of Card Game 29 app using **Node.js** & **Express.js**
- Integrated **Firestore** authentication & **Redis** with **MongoDB** for storing and updating database

### Natural Language Processing Research Intern

[May '20 - Aug '20]

Guide: Prof. Gourab Nath, Praxis Business School

- Devised a **feature extraction** pipeline to extract **frequently mentioned** product features
- Obtained **sentiment** scores from derived customers’ **opinions** on product features using **VADER**

## TECHNICAL PROJECTS

### Question Answering via Knowledge Graphs and Deep Learning in Aviation Domain

B.Tech Project | Guide: Prof. Pushpak Bhattacharyya

[Aug '21 - Present]

The project aims to retrieve information from a collection of documents given a query in natural language

- Devised **natural language** to **Cypher** query generation pipeline for Question Answering over KG
- Designed a **Paragraph Retrieval** and a **Question Answering** module using **S-BERT** and **GPT-3**
- Constructed a **gold standard dataset** for evaluation of integrated **KG-** and **DL-based QA** system
- Developing a model for **Automatic KG Construction** using **rule-based NLP** and **DL** techniques

### Rover Path Finder

[Jun '20 - Jul '20]

Mars Colonisation Program | Microsoft Engage 2020

- Built a **web application** to find the **shortest path** between two points in a grid with obstacles
- Implemented various **algorithms** as features in UI like A\*, Best-First Search & Breadth-First Search
- Introduced **elements** like navigating through multiple destinations to find the **optimal path**

### Named Entity Recognition | Course Project

[Apr '21 - May '21]

Guide: Prof. Pushpak Bhattacharyya | Deep Learning for Natural Language Processing

- Fine-tuned **BERT** model for NER formulated with a **Machine Reading Comprehension** approach
- Depicted **2%** superiority on **nested NER** as a **sequence labeling** problem on **ACE 2004** Corpus

**Team Member | IIT Bombay Student Satellite Program** [Feb '19 - Present]

**Sanket: Antenna Deployment System**

*The mission aims to develop an indigenous Antenna Deployment System with TRL-8*

- Designed **PCBs** using **EAGLE** for the antenna deployment system and peripheral circuit of **CC1125**
- **Surveyed** and **finalised** onboard components within design **constraints** from mission requirements
- Outlined communication system functional breakdown for Failure Mode & Effect Analysis (**FMEA**)

**Smart UI** [Jan '21]

*Hackathon | Techfest, IIT Bombay*

- Created a web application for generating **JSON** and **HTML** files from the screenshot of a **wireframe**
- Applied a three-stage pipeline to **detect & classify** components and **extract** class-based attributes
- Utilised **Streamlit** library to make an interactive **web interface** for uploading & downloading files

**Web App Vulnerability Scanner | Course Project** [Jan '21 - May '21]

*Guide: Prof. G. Sivakumar | Foundations of Network Security and Cryptography*

- Developed a tool in a **team** of 4 to perform **inline vulnerability scan** of any website given its URL
- Engineered modules to check **open redirection**, **XSS**, **SSL/TLS certificates** & **phishing** issues

**Iris Recognition | Course Project** [Nov '20- Dec '20]

*Guide: Prof. Suyash Awate | Digital Image Processing*

- Designed an Iris recognition algorithm using **phase components** in **2D DFTs** of given images
- Preprocessed images using iris **localisation** and **normalisation** techniques to remove irrelevant parts
- Evaluated **matching score** using **BLPOC** function and identified genuine and impostor attempts

## POSITIONS OF RESPONSIBILITY

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**Institute Student Mentor** [Jul '21 - Present]

*Student Mentor Program, IIT Bombay*

- Selected in group of **133** mentors out of **300** applicants after careful ethical assessment & peer review
- Responsible for a **smooth transition** of a group of incoming undergraduates to life at the institute

**Subsystem Head | Non-Technical Subsystem** [Jan '21 - Present]

*IIT Bombay Student Satellite Program*

- Spearheading a **10-membered** team comprising of graphic designers, content creators & web developers
- Overhauling the existing **website** by fully **responsive** one in PHP adding new content and features
- **Managing** social media accounts on **Instagram** (**500+** followers) and **Facebook** (**5.7k+** followers)

**Subsystem Head | Communication Subsystem** [Jan '20 - Dec '20]

*IIT Bombay Student Satellite Program*

- Oversaw the **concept** & operational **planning** of subsystem as well as smooth **conduct** of activities
- Conducted two **ground station workshops** for more than **50 students** of **15+ colleges** to achieve the **social goal** of the project to help establish ground stations in colleges and spread space awareness
- Executed a **three-stage recruitment** process and selected **10** out of **50+** candidates for subsystem

## ACHIEVEMENTS

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- **First** in **Smart UI**: Generate JSON & HTML from Wireframes | **Hackathon**, Techfest, IITB [2021]
- **Third** in **Site Developer**: Creating Website for an NGO | **Hackathon**, Techfest, IITB [2021]
- **Top** three-member team in Mars Colonisation Program | **Microsoft Engage** [2020]
- Recipient of the prestigious **KVPY** fellowship with **AIR 534** by DST, Govt. of India and IISc [2016]

## EXTRACURRICULARS

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- Participated in **AI Email Classifier** and **Corp Comp Hackathons** organised by Techfest [2020]
- Designed an **autonomous line-follower** bot using **Arduino UNO** and **IR sensors** [2019]
- Developed **AquaGerator**, a system that converts **water vapour** into **drinkable water** [2019]
- Completed **80 hours** of training in **Chess** under the **National Sports Organisation** [2019]