

# Yash Jain

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## EDUCATION

### Indian Institute of Technology Bombay

*Bachelor of Technology in Computer Science*

Mumbai, India

July 2017 – August 2021

**Cum. GPA:** 8.78/ 10.0

**Relevant Courses:** Artificial Intelligence & Machine Learning, Organisation of Web Information, Speech, Web & Natural Language Processing, Bachelors Thesis Project-1,2, Machine Learning for Remote Sensing-II

## PUBLICATION

- [1] J. Wang, C. Pan, H. Jin, V. Singh, Y. Jain, J. I. Hong, C. Majidi, and S. Kumar. RFID Tattoo: A Wireless Platform for Speech Recognition. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, 3(4), Dec. 2019.

## EXPERIENCE

### Automated E-commerce Question-Answering system

Summer 2020

*Guide: Nikesh Garera & Nithish Pai*

*Flipkart, India*

- Generated synthetic queries from a limited set of user query to increase the dataset size by more than 30%
- Combined BERT and GPT-2 models for developing a target product-type classification system which would then prompt the text-generation model to answer user query in natural language all in real-time
- System might be implemented to the company's website, subject to quality check approval

### RFID Tattoo: A wireless platform for speech recognition [\[paper\]](#)

Summer 2019

*Guide: Prof. Swarun Kumar*

*Carnegie Mellon University, USA*

**Best long paper award** (1 out of 121 papers) | **U.S. Patent pending**

*UbiComp, 2020*

- Speech recognition platform for voice impairments through wafer-thin, battery-free and stretchable RFID Tattoos
- Collected own sensor data and implemented Random Forest model calibrated on the stretch of tags to achieve state of the art 86% accuracy on a vocabulary size of 100 most common English words

## RESEARCH PROJECTS

### Dynamic link prediction of Social Networks

Autumn 2020 - Present

*Guide: Prof. Soumen Chakrabarti & Prof. Abir De | Bachelor's Thesis Project-2*

*InfoLab, IIT Bombay*

- Creating a novel method for predicting the evolution of social networks across time steps

### Deep Neural Matching Models for Graph Retrieval from Product Graph

Autumn 2020 - Present

*Guide: Prof. Abir De & Prof. Soumen Chakrabarti | Bachelor's Thesis Project-2*

*InfoLab, IIT Bombay*

- Developing a novel deep neural network approach for searching a subgraph from a corpus of sample graphs
- Working on decreasing the query time to sub-linear time by employing LSH hashing of corpus graphs

### Answer-type Inference in QA systems [\[report\]](#) [\[slides\]](#)

Spring 2020

*Guide: Prof. Soumen Chakrabarti | Bachelor's Thesis Project-1*

*InfoLab, IIT Bombay*

- Outperformed an existing Answer-Type Inference RNN based manuscript system by almost 20% across 4 Question-Answering datasets by deploying BERT architecture

## AWARDS

- Selected in **Summer Undergraduate Internship Program** at Carnegie Mellon University 2019
- Gold Medalist** in theory and **Silver Medalist** in practicals representing India at 11th International Junior Science Olympiad held in Mendoza, Argentina 2014
- All India Rank 8** in **KVPY Fellowship** by Dept. of Science & Technology, Govt. of India 2016
- All India Rank 29** in **JEE-Advanced** out of 220,000 shortlisted candidates from 1.2 million students 2017
- Amongst **top 35 students** to reach Indian Team selection camp for International Astronomy Olympiad 2017
- Selected in **top 300 students** in India to appear for Indian National Physics, Chemistry Olympiads 2017
- Recipient of **National Talent Search Examination Fellowship** by NCERT, Govt. of India 2014

## KEY COURSE PROJECTS

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### Adversarial Reprogramming of Neural Networks

Autumn 2019

Guide: Prof. Ajit Rajwade & Prof. Suyash Awate | *Digital Image Processing course*

IIT Bombay

- Reprogrammed ImageNet classification model - ResNet50v2 on MNIST dataset to perform an adversarial task by finding a single constant learnable weight matrix, added to all test inputs; achieved an accuracy of 80%
- Illustrated the vulnerability in deep neural networks that perform a task chosen by the adversary despite not being trained to do this task originally

### Comparing Extractive and Abstractive Text Summarisation

Autumn 2019

Guide: Prof. Ganesh Ramakrishnan | *Artificial Intelligence & Machine Learning course*

IIT Bombay

- Implemented an extractive text summarizer using the page rank algorithm, achieved a ROGUE score of f-32%
- Comparatively, the abstractive summarizer built using seq2seq model with attention mechanism, achieved a ROUGE scores of only f-13%
- Latent Semantic analysis of the generated summary and the ground truth revealed an overlap of 79%

### Secure Personal Cloud

Autumn 2018

Guide: Prof. Soumen Chakrabarti | *Software Systems Lab course*

IIT Bombay

- Implemented a cloud-based file storing system for Linux system with block-level customizable file encryption schema allowing multiple clients to decrypt their data at real-time simultaneously or share the same
- Developed a bash interface along with a web client for an interactive user experience

### Quarter to Sixth Sense

Summer 2018

Institute Technical Summer Project | *Electronics and Robotics Club*

IIT Bombay

- Remodeled a wearable gesture interface by programming color tracking algorithms that perform functions in correspondence with hand gestures by recognizing the color markers on fingers

### Wireless Game Console

Summer 2018

Institute Technical Summer Project | *Electronics and Robotics Club*

IIT Bombay

- Prototyped a remote with air mouse capability which recognizes its relative change in orientation and position in a 2D plane using a gyroscope and IP algorithms on a PiCamera

### Rumor - A social application

Summer 2018

Seasons of Code | *Web and Coding Club*

IIT Bombay

- Built an android app which broadcast rumors (messages) from one user to all users connected on the P2P network allowing each user to save, discard or share rumors by a single swipe

## POSITION OF RESPONSIBILITY

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### Technical Head | *NGO We Listen, India*

Summer 2020 - Present

- Leading a team of interns with the development of a professional website for increasing mental health awareness
- Engineering a browser extension to automatically detect hate speech content on social media platforms while synchronously hiding it before the purview of the user, creating a virtual hate-free space

### Undergraduate Teaching Assistant | *IIT Bombay*

Spring 2020 & Autumn 2018

*Computer Programming & Utilization*

*Spring 2020*

- Responsible for setting algorithmic coding questions for graded and ungraded labs for 500+ freshmen

*Quantum Physics & its Applications*

*Autumn 2018*

- Conducted weekly course tutorials for a batch of 50 freshmen and evaluated their term papers

### Academic Resource Facilitator | *International Junior Science Olympiad cell (IJSO), HBCSE*

Summer 2018

- Student facilitator for mentoring top 35 students from India in IJSO Selection Camp 2018

## TECHNICAL SKILLS

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**Strong:** Python (with Tensorflow and PyTorch), C/C++, Bash, MATLAB

**Familiar:** Java, SQL (Postgres), JavaScript, HTML/CSS, Android, Arduino

**Tools:** Git, Google Cloud Platform, LaTeX, SolidWorks

## EXTRACURRICULAR

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- Regularly writing a technical blog, **BitShots** for discussing various ML research papers in lucid language  *2020*
- Awarded with **special mention** under technical awards category by Hostel 3, IIT Bombay *2019*
- **Champion of Champions** at a State level Abacus mental arithmetic competition *2014*