Yash Jain

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Education

Indian Institute of Technology Bombay — Mumbai, India
Bachelor of Technology in Computer Science — *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, Digital Image Processing

Publications

[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

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 being not trained to do this task originally

Comparing Extractive and Abstractive Text Summarisation Autumn 2019
Guide: Prof. Ganesh Ramakrishnan | Aritificial Intelligence & Machine Learning course *IIT Bombay*
- Implemented an extractive text summarizer using the page rank algorithm, achieved a ROGUE score of f-32%. Latent Semantic analysis of the generated summary and the ground truth revealed an overlap of 79%
- Comparatively, the abstractive summarizer built using seq2seq model with attention mechanism, achieved a ROUGE scores of only f-13%

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

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

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

- 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*