



Education

Indian Institute of Technology, Kharagpur
Bachelor of Technology, Computer Science

CGPA: 8.85/10
Jul' 17 – Present

Candlewick Public School, Jaipur
High Secondary Examination

Aggregate: 91.8%
Apr' 15 – May' 17

Tagore Public School, Jhunjhunu
Secondary Examination

CGPA: 10/10
Apr' 14 – Mar' 15

Research Interests

Machine Learning • Computer Vision • Natural Language Processing • Robotics

Research Experience

Visual Information Processing Lab, IIT Kharagpur

May' 19 – Present

Advisor: [Prof. Jayanta Mukhopadhyay](#)

[\[Github\]](#)

Topic: **Design and implementation of algorithms for visual object tracking tasks**

- Implemented deep learning based state of the art networks like DaSiamRPN. DaSiamRPN works at more than 200 FPS when tested on OTB2015 dataset and gives an AUC of more than 0.63 compared to 0.655 as mentioned in the paper
- Devised a new look-ahead approach for processing information from upcoming frames, when tested on KCF, it improves the estimated average overlap (EAO) by more than 5%
- Currently working on integrating the aforementioned approach with a convolutional feature extractor, a region proposal network and a verification network to achieve better results in long term tracking

Research Areas: Computer Vision, Machine Learning

Centre for Artificial Intelligence, IIT Kharagpur

Aug' 19 – Present

Advisor: [Prof. Sudeshna Sarkar](#)

Topic: **Context based question answering NLP model**

- Developed a bidirectional auto encoder based model which uses the information extracted from context with out of reference knowledge to get the softmax probabilities over all the possible answers to a question
- Extracted the edges based relations from commonsense corporas like ConceptNet and NELL
- Working on making commonsense inclusive word vectors using the relations extracted like ConceptNet Numberbatch

Research Areas: Natural Language Processing, Machine Learning

Projects

Kinship Relationship Prediction

May' 19 – Jul' 19

Kaggle Challenge

[\[Github\]](#)

Topic: **Predicting if two persons share kinship relationship based solely on the images of their faces**

- Developed a Siamese convolutional neural network based model for feature extraction and a dense layer on top of it for binary classification
- Tuned the hyperparameters to achieve more than 85% accuracy on the Face in the Wild dataset

Frameworks/Libraries Used: TensorFlow, Keras, Pandas

Here I Am, Virtual Assistant

Feb' 19 – Apr' 19

Advisor: [Prof. Sudip Mishra](#)

[\[Github\]](#)

Topic: **Task Manager: Term project for the course Software Engineering**

- Developed a web application which can be used for scheduling tasks and event reminders along with calendar integrated file management
- Integrated Google custom search API to serve the purpose of web search with filtered recommendations

Languages/Tools Used: HTML, CSS, JavaScript, Java Servlets, MySQL

Topic: Optimized information retrieval using query processing specific to legal documents

- Developed a search engine to retrieve relevant information from a database of more than 53000 case reports
- Created four different pipelines to process phrasal as well as natural language queries
- Extracted key information from the original documents and created a new database to improve the search results' accuracy and speed

Language/Tools Used: Python, Flask, Elasticsearch, MongoDB, React

Skills

Languages	Python • C/C++ • Java • JavaScript
Libraries/Frameworks	TensorFlow • PyTorch • OpenCV • Keras
Web/Development	HTML • CSS • Django • Android
Tools	Git • Shell • Unix • Markdown • \LaTeX • Android Studio

Relevant Courses

Convolutional Neural Networks for Visual Recognition	Deep Learning Specialization	Machine Learning
Probability and Statistics	Discrete Structures	Algorithms 1 (L) & 2*
Software Engineering (L)	Switching Circuits (L)	Cryptography*
		Compiler Design (L)*
		Computer Architecture (L)*

(*marked courses are still ongoing, 'L' marked course have a laboratory component with them)

Awards and Achievements

Joint Entrance Examination (JEE) – Advanced 2017

Among top **0.12%** of the **0.2 million** candidates, ranking **259**

Joint Entrance Examination (JEE) – Mains 2017

Among top **0.07%** of the **1.2 million** candidates, ranking **732**

National Standard Examination in Astronomy (NSEA) 2016

Among top **1%** of more than 6000 candidates

Positions of Responsibility

Azad Hall of Residence, IIT Kharagpur Jul'18 – Apr'19

Secretary Technology

As the secretary of technology, I was responsible for the participation of the hall team in the Technology General Championship, IIT Kharagpur. Our team won the overall Silver medal with Gold in Hardware Modelling, Silver in OpenSoft and Bronze in Data Analytics.

Space and Technology Society, IIT Kharagpur Jul'17 – Jun'19

Associate Member, FQTQ

I have organized telescope sessions, workshops on Astrophysics and Astronomy and several other related events for the students of IIT Kharagpur and also for the National Students Space Challenge. I also contributed several articles on Astrophysics and Astronomy to the annual magazine Moonwalk of SpATS.

Extra-Curricular Activities

National Service Scheme, Ministry of Youth Affairs and Sports Jul'17 – Apr'19

Volunteer Member

I organized multiple book distribution, cloth distribution campaigns to help the people of Poriapara village, Kharagpur. I also participated in the data collection for the water and sanitation facilities survey in the nearby villages of Kharagpur.

Sports General Championship, IIT Kharagpur Jan'18 – Feb'19

Basketball Player

Secured third position among more than 20 teams in both 2018 and 2019 Sports General Championship, IIT Kharagpur