# KUMAR SHIVAM

Final Year Undergraduate
Department of Mathematics and Computing
Indian Institute of Technology, Kanpur

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## EDUCATIONAL QUALIFICATIONS

| Year | Degree | Institution(Board) | CGPA/% |
|---|---|---|---|
| July'17 – June'21 (expected) | B.S., MTH | Indian Institute of Technology, Kanpur | 8.8/10.0 |
| 2017 | AISSCE – XII | Jawahar Vidya Mandir, Ranchi | 94.0% |
| 2015 | CBSE – X | Jawahar Vidya Mandir, Ranchi | 10.0/10.0 |

## SCHOLASTIC ACHIEVEMENTS

- Got the opportunity for changing Major based on Academic Performance, 2018.
- Rank 2872, JEE Advanced 2017 (amongst 220,000 candidates).
- Rank 3478, JEE Main 2017 (amongst 1.5 million candidates).
- All India Rank 675 in Kishore Vaigyanik Protsaan Yojana, conducted by Indian Institute of Science (IISc), Bangalore. 2016
- Among the top 10% in National Standard Examination in Physics (NSEP), conducted by Indian Association of Physics Teachers (IAPT). 2016-17
- Among the top 1% in National Standard Examination in Junior Science (NSEJS), conducted by Indian Association of Physics Teachers (IAPT), and qualified for Indian National Junior Science(INJSO). 2014-15
- Qualified first level National Talent Search Examination (NTSE), conducted by National Council of Educational Research and Training (NCERT).

## WORK EXPERIENCE

**Indian Sign Language Converter** *WinVinaya Foundation*
*JPMorgan Chase & Co.* June 2020-July 2020
- Built a full stack android application that converts ISL gestures to text and vice versa.
- Trained a Recursive Neural Net model to recognize hand gestures using google's Mediapipe library as encoder.
- Used NLP to extract root words to ease the transition from english to ISL grammar.
- Used S3 Bucket and EC2 instance of AWS to host back-end.
- Built a Trie text predictor.

**Low-Complexity Automatic License Plate Detection**
*Nanyang Technological University, Singapore* June 2019-July 2019
- Reduced the Complexity of Automatic License Plate Recognition(ALPR) system for identification of vehicles violating traffic rules using Image processing techniques.
- Applied character segmentation based on horizontal projection of grey-scale images.
- Signature based character recognition based on recognizing the vertical and horizontal edges detection.
- Retrained the classifier(Squeeze-Net) and pruning for different camera angles.

**CodeFunDo++** *Microsoft India*
*Microsoft Academic Accelerator* October 2018
- Built a full stack web application that predict the percent chance of thunder storm at particular location on the basis of few meteorological data.
- Got acquainted with the Microsoft Machine learning web services.
- Used Microsoft Azure to deploy the application.

## RELEVANT COURSES

| | | | |
|---|---|---|---|
| Modern Cryptography | Data Structures and Algorithms | Group Theory | Probability & Statistics |
| Linear Algebra | Partial Differential Equation | Complex Analysis | Topics in Topology |
| Multiple-variable Calculus | Quantum Physics | Thermodynamics | |

## PROJECTS

**Cryptographic Ciphers** *Jan 2020- May 2020*
*IIT Kanpur* Github Repository
- Broke DES(Data Encryption Standard) Cipher and AES(Advanced Encyption Standard) Cipher using Known Plaintext Attack.
- Broke RSA Cipher using lattice theory and Copperfield's Algorithm upto exponent 5.
- Broke Substitution and Sub+Permutation Cipher using Frequency Analysis.
- Broke Vigenère Cipher.

**Server-Client** *March 2019*
*IIT Kanpur* Github Repository
- Built a server client interface that sends the messages as Java objects that contains String that are given input by user and also a separate field for a checksum of this String.
- The sender generates and sends new objects at fixed time intervals (10s) and at same time receiver instance receives and prints the messages with current time.

## MISCELLANEOUS

- Achieved 1st Position in Cluster-2 Basketball U-19 tournament organized by CBSE and recognized by Ministry of Youth Affairs And Sports, Govt.Of India. [2013-2014, 2015-2016]
- Participated in Basketball Nationals U-19 tournament organized by CBSE and recognized by Ministry of Youth Affairs And Sports, Govt.Of India. [2013-2014]

## POSITIONS OF RESPONSIBILITY

- **Manager, Finance**, *Antaragni 2019* : Responsible for the expenditure management regarding the festival and also organising the vendors across the city for the festival.

## SKILLS

**Programming**: C, C++, Java and Python.
**Machine Learning**: NLP(Natural Language Processing), RNN(Recursive Neural Net), CNN(Convolutional Neural Net), Regression.
**Cloud**: EC2, Flask, PHP, API.
**Web Development**: HTML, CSS, JavaScript, BootStrap.
**Database**: MySQL
**Design**: Android Studio, Autodesk Fusion 360, AutoCAD, Autodesk Inventor.
**Utilities**: Linux shell utilities, Git ,Bash and Vim, OpenCV, LaTeX.