

Name - Mayank Kumar Singh

Homepage - <https://mayank-git-hub.github.io>

GitHub - <https://github.com/mayank-git-hub>

Scholastic Achievements

- Secured All India Rank of **108 in JEE Advance 2016 in General Category** among 198,228 candidates
- Secured All India Rank of **1484 in JEE Mains 2016 in General Category** among 1,207,058 candidates
- Recipient of prestigious **KVPY fellowship with All India Rank of 363 (/60,000)**

Professional Experience

- **SONY Japan, Research Internship** : May - July 2019
 - Worked with Audio Technology Research Department in SONY Japan, Osaka to improve Deep Audio Visual Source Separation
 - Used **WaveNet** like architecture, Temporal Convolution for audio speech separation and used visual features for improving separation **SISR** and surpassed current SOTA implementations.
- **HDFC Life, Research Internship** : May - July 2018
 - Automated customer interaction by automating questions asked using **Reinforcement Learning**.
 - **Feature Engineering** and **Clustered Customer data** for extracting useful statistics and analysis of the algorithm

Projects

Research Projects.....

- **Deep Audio Visual Source Separation** - Guide Prof. Rajbabu Velmurugan and Naoya Takahashi, SONY Corp.
 - Modified ConvTasNet to incorporate Lip Videos for enhanced **Audio Source Separation** on the AVSpeech dataset
 - Achieved State of the Art Results on it, beating Google and Oxford's implementation
- **Segmentation of Medical Image** - Guide Prof. Amit Sethi
 - Applied **NN**, **SSNMF**, **NMF**, **SVM** algorithms to do pixel-level segmentation on Hyperspectral Images
 - Implemented the initial steps for detecting cancer by segmenting epithelium, stromal and goblet cells.
- **ISBI 2018: Diabetic Retinopathy, Segmentation of lesions-** Guide Prof. Amit Sethi
 - Aim - Segmentation and classification of the lesions in patients of Diabetic Retinopathy
 - Applied state-of-the-art algorithm **fusion-net** for segmentation and **Zoom-In Net** for classification.
 - Competition Paper- <https://mayank-git-hub.github.io/pdf/ISBI2018.pdf>
- **Graph Convolution for Text Recognition** - Guide Prof. Shubhasis Chaudhari
 - Implemented the CRAFT text-detection training model based on weak supervision
<https://github.com/autonise/craft-remade>
 - Working on incorporating graph convolution and language model to create end-to-end text detection and recognition
- **Whole Slide Image Stitching using DC motor video** - Guide Prof. Amit Sethi

Other Projects.....

- **Kaggle Competition: iMaterialist Challenge (Furniture) at FGVC5**
 - An orthodox classification competition with **highly skewed class size** and high intra class and low inter class variation.
 - Trained **ResNet-152**, **NASNet** model using extensive class specific data augmentation.
 - Got a **rank of 30** under the team name 'Artificial incoherence'
- **Text Detection and Recognition on Documents**
 - Implemented Pixel-Link for Text Detection on <https://github.com/mayank-git-hub/Text-Recognition>
 - Achieved an F1-score of 74% which is **6% more than Google's on our custom dataset** consisting of passports, aadhar cards, driving license cards and other docs which we annotated using our annotation tool built using javascript.

Education

Institution	Specialisation	Year	GPA/Percentage
Indian Institute of Technology, Bombay	Electrical Engineering, B.Tech	2019(Ongoing)	8.88
Air Force School, VN, Pune (HSC)	Computer Science	2016	93.8%
Air Force School, VN, Pune (SSC)	None	2014	10

Courses Undertaken.....

Computer Vision	Probability and Random Process	Data Analysis and Interpretation
Network Theory	Data Structures & Algorithms	Linear Algebra
Computer Networks	Signals and Systems	Micro-Processors

Technical skills

o Programming Languages:

Proficient in: C, C++, Python, JAVA, Javascript
Specific libraries for Machine Learning - Tensorflow, Pytorch
Also basic ability with: Matlab, Shell Script, Arduino, NgSpice, VHDL, AutoCad, Solidworks.

o Deep learning models:

Classification - Res-Nets, Inception-Net, Alex-Net, Capsule-Net, Zoom-In-Net, NASNet
Segmentation - U-net(Variants - ResNet-UNet, Fusion-Net)
Feature Extraction - Siamese doublet/triplet networks, AutoEncoders, Variational AutoEncoders.
Audio Separation - WaveNet, ConvTasNet, TasNet

o Web & Android Development:

Server Side - Django, Flask, AWS
Client Side - Android-Studio(JAVA), HTML, JS, D3JS, Three JS, ES6. React

Position of Responsibility

o Cofounder and Director, Autonise AI

- Founded a team of 8 with the vision to act as Technical Consultant in the field of Machine Learning.
- Targeted the domains -
Text Detection and Recognition, Quant Algorithms, Facial Segmentation

o Mentoring

- **GyanAngels** - Mentored two mentees in 10th Grade in Machine Learning and Advanced Mathematics in a startup.
- **Summer of Science** - Mentored a group of freshers and cultivated a basic understanding of ML concepts.
- **Institute Technical Summer Project** - Supervised a team for building a handwritten letter recognition, working in real time.

o Hostel Positions of Responsibility

- Sports Secretary, 2017
- Technical Councillor, 2018

References

- o **Professor Shubhasis Chaudhuri**, Director of Indian Institute of Technology, Bombay
Contact info: sc@ee.iitb.ac.in
- o **Professor Amit Sethi**, Electrical Engineering, Indian Institute of Technology, Bombay
Contact info: asethi@ee.iitb.ac.in
- o **Professor Rajbabu Velmurugan**, Electrical Engineering, Indian Institute of Technology, Bombay
Contact info: rajbabu@ee.iitb.ac.in