

# Karan Sehgal

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## Education

### Indian Institute of Technology Ropar

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING

CURRENT C.G.P.A : **9.49/10**

DEPARTMENT RANK : **3**

Ropar, India

July 2016 - Present

### Central Board of Secondary Education

AISSCE (CLASS 12): **92.4%**

AISSE (CLASS 10): **9.4/10**

Delhi, India

## Skills

**Programming Languages** C/C++, Python, Octave, HTML5, CSS, PHP, Javascript, Shell

**Frameworks / Libraries** Django, Django REST Framework, jQuery, NumPy, Pandas, Matplotlib, Tensorflow, Beautiful Soup

**Softwares / Tools / OS** Photoshop, MATLAB, Latex, Git, Linux(Ubuntu)

## Work Experience

### CERT-In

INTERN

Ministry of Electronics and IT

December 2017

- Created a **scheduled web scraper** that scraps malware urls from the web (Using Beautiful Soup) and stores them into an SQLite database.
- Connection to the database is established through a Django app. The app is integrated with the **viper framework** for malware analysis.
- **ChartJS** was used to build charts showing the most common malware urls.
- Created a **REST API** for the project using Django Rest Framework.

## Projects

### Face Generation

Tensorflow, Python

- Used **deep convolutional generative adversarial networks** to generate new images of faces.
- Created a generator network to generate new images. Used **SWISH** activation for the **transposed convolution layers** and **tanh** activation for the output layer.
- Created a discriminator network that discriminates on images. Used **Leaky ReLu** activation for the **convolution layers** and **sigmoid function** activation for the output layer.
- Used **MNIST** and **CelebA** datasets. Trained the dataset over an Amazon EC2 GPU.

### SIMD Co-Processor and Simulator

C++

- The project involves implementing a functional simulator for SIMD instructions integrated with a SimpleRISC Architecture.
- In addition to sixteen single element 32-bit registers, the architecture contains sixteen 64-bit registers representing a vector of four 16-bit elements. Basic arithmetic, logical and memory operations are supported in a **pipelined design**.

### TV Script Generator

Tensorflow, Python

- Designed a program in tensorflow, which generates TV scripts for the Simpsons using RNNs.
- Implemented **LSTM Cells, Word Embedding and Sequence Batching**. Trained the dataset over an Amazon EC2 GPU.

### Image Compression

Matlab

- Implemented K-Means to compress a 24-bit png image into a 16-bit png image.
- Ran K-Means on the colors of the pixels in the image and mapped each pixel onto its closest centroid.

## Relevant Courses

**Computer Science** Data Structures, Computer Architecture, Machine Learning, Deep Learning (Udacity Nanodegree)

**Mathematics** Advance Calculus, Linear Algebra, Probability Theory, Discrete Mathematics

## Position of Responsibility

### Coding Club Coordinator

2017-2018

Conduct regular coding sessions for juniors for basics of programming and organise regular coding contests for them.

### Batch Representative

2017-2018

Liason between students and professors to ensure effective training by incorporating students feedback

## Miscellaneous

**ACM ICPC** Qualified for ACM ICPC Indian Regionals 2017-18. Secured a rank of **31** in Asia Gwalior Regional.

**JEE Rank** Secured a rank of **3893** (Out of **1.5 million candidates**) in Joint Entrance Exam, 2016.

**Website** Have worked on **three official** websites for IIT Ropar

**Social Work** Educated and guided underprivileged children from govindpuri slums.

**School Award** Received the Computer Wizard award from Bluebells School International.