

# Deep Kiran Shroti

Electronics and Electrical Communication Engineering  
(Specialization in Visual Information Processing and Embedded Systems)  
Minor Course: Computer Science and Engineering (B. Tech.)

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Examination	University	Institute	Year	CGPA/Marks
Graduation	IIT Kharagpur	IIT Kharagpur	2017	9.20/10
AISSCE	CBSE	Delhi Public School, Bhopal	2011	95% (PCM)
AISSE	CBSE	Delhi Public School, Bhopal	2009	91.6%

## INTERNSHIP AND ACADEMIC PROJECTS UNDERTAKEN

### 1. Multimedia Labs, Avaya India Pvt Ltd. May – July 2015

**Project:** Integration of Co-browsing facility in Unified Communications System with annotation capabilities.

*Guide: Dr. Ramanujan Kashi, Research Director, Avaya India Pvt Ltd., Bangalore.*

- Developed multiparty web-sharing solution that enables moderator to share web browsing session without local software.
- Added annotation capability that enables any participant to do annotation with different colours on moderator's webpage.

### 2. Machine Intelligence & Expert Systems , Indian Institute Of Technology, Kharagpur July – December 2015

**Project:** Detecting imposter by key stroke dynamics and analyzing effect of mood of a person on key stroke dynamics.

*Guide: Professor Sudipta Mukhopadhyay, Department Electronics & Electrical Communication Engineering, IIT Kharagpur.*

- Predicted mood of a person using K-Nearest Neighbour on facial key points (Reference paper- "[Facial Key point detection](#)").
- Identified different user's key stroke dynamics using Gaussian Mixture Model.

### 3. Machine Learning , Indian Institute Of Technology, Kharagpur July – December 2014

**Project:** Combining player's incomplete statistics to predict outcomes of tennis matches.

*Guide: Professor Sourangshu Bhattacharya, Department of Computer Science and Engineering, IIT Kharagpur.*

- Implemented SVM with radial basis function kernel to classify multivariate data set of 127 instances and 42 attributes.
- Succeeded in achieving a cross validation error of 4.76% for optimized sigma and optimized C value.

## CURRENT ACADEMIC PROJECTS

### 4. Anomaly Detection in Surveillance, Indian Institute Of Technology, Kharagpur January 2016 - present

**Project:** Anomaly detection in surveillance video using deep learning techniques.

*Guide: Professor P. K. Biswas, Head of the Department, Electronics & Electrical Communication Engineering, IIT Kharagpur*

- Implemented Stack Auto Encoder, Deep Belief Network on MNIST digit dataset and achieved an accuracy of 98%.
- Using Deep Auto Encoder and Gaussian Mixture Model on Ped-2 data in UCSD dataset achieved equal error rate of 50.15%.

### 5. Speech and Natural Language, Indian Institute Of Technology, Kharagpur July 2015 - present

**Project:** Plagiarism detection in programming language source codes using Natural Language Processing Tree kernel methods

*Guide: Professor Pawan Goyal, Department of Computer Science and Engineering, IIT Kharagpur*

- Devised and implemented a plagiarism detection architecture using Subtree, Subset Tree and Partial Tree Kernel.
- Increased the tenfold cross-validation accuracy from 50% using language model to 78% using kernel tree methods.

## CLASSROOM PROJECTS

Computing Laboratory	Implemented a custom Linux shell, Multi-Process Multi Thread Management, Search system using Skip List and GraphViz for visualization, A song-singer search system using R and Hadoop and built a search system on the lines of PageRank for Amazon food database using R.
Digital Communication	Designed an intelligent transmitter-receiver system, which can adapt according to the changing channel parameters. Features include Noise Detection and Adaptation, Jammer detection and adaptation.
VLSI Laboratory	DFT (Discrete Fourier Transform) implementation on Xilinx ISE Design Suite using Verilog.

## SCHOLASTIC ACHIEVEMENTS

- Awarded **Distinction in Science** in International Assessment for Indian Schools by **University of New South Wales**. [2008]
- Secured a **Department Change** to Electronics and Electrical Communication Engineering with a **CGPA of 9.47**. [2013]
- Awarded Gold Medal in **National Mathematics Olympiad** Contest by All India Mathematics Teacher Association. [2009]
- Secured an All India rank of **212** in **8th National Cyber Olympiad** organised by Science Olympiad Foundation. [2009]
- Scored a **percentile of 96.67** in the 12th **National Science Olympiad** organised by Science Olympiad Foundation. [2009]
- Awarded **Maroon Blazer** for 85% and above for consecutive **7 years** in Delhi Public School, Bhopal. [2011]

## TECHNICAL SKILLS AND PROFICIENCIES

<b>Programming Languages</b>	• Python	• C/C++	• JavaScript	• Node.js	• HTML5+CSS
<b>Numerical and Design</b>	• MATLAB	• R	• Hadoop	• Verilog	• Google SketchUp
<b>Other</b>	• Latex	• Microsoft Office	• Linux Programming		
<b>Operating Systems</b>	• Windows (XP/Vista/7/8)	• Linux(Ubuntu/ CentOS)			

## COURSES UNDERTAKEN

\* Practical Component Included # Pursuing in current semester

- |  |                            |  |
|--|----------------------------|--|
| ▪ Pattern Recognition and Image Understanding <sup>#</sup> | ▪ Machine Learning         | ▪ Digital Image Processing*            |
| ▪ Speech & Natural Language Processing                     | ▪ Operation Research       | ▪ Digital Signal Processing*           |
| ▪ Machine Intelligence & Expert Systems                    | ▪ Algorithms <sup>*#</sup> | ▪ Probability and Stochastic Processes |
| ▪ Visual Communication <sup>#</sup>                        | ▪ Computing Lab            | ▪ Programming and Data Structure       |

## POSITION OF RESPONSIBILITY

- Senior Hall Coordinator, R.P. Hall of Residence, Student Welfare Group, IIT Kharagpur** [2014]
- Inducted a team of 18 wing representatives to maximize the reach of student counselling and advisement program.
  - Organized a workshop on crisis and behaviour management which was attended by all sophomores of R.P. Hall.

## EXTRA CIRCULAR ACTIVITIES

### National Cadet Corps

- Passed the **C certificate Examination** under the authority of **Ministry of Defence**, Government of India. [2014]
- Awarded the rank of **Cadet Corporal** by National Cadet Corps. [2014]

### Cultural

- Awarded State **Gold Medal** in All India Child Art Competition held by **Child Art Club**. [2002]
- Certificate of Merit for securing **First position** in Inter House Painting Competition in School. [2006]
- Stood **Second** in Bhopal in painting competition organized by AFC, Bhopal. [2004]

### Sports and Games

- Part of **Gold & Bronze** Winning Inter House Football Team of the School. [2007, 2011]