

# DHEERAJ SACHAN

[dhirajsiitk9@gmail.com](mailto:dhirajsiitk9@gmail.com)

Phone:7406628160

## EDUCATIONAL QUALIFICATIONS

Year	Degree	Institution(Board)	CPI/%
2013	Bachelor of Technology (Electrical Engineering)	Indian Institute of Technology , Kanpur	7.9/10
2008	XII	M.T.M.H.S. School, Kanpur	90.4%
2006	X	M.T.M.H.S. School, Kanpur	93.5%

## SKILL SETS

- Programming Languages : PHP, Java, JavaFX, C, Matlab
- Databases : MySQL, SQLite, Redis
- Tools & Technologies : FFMPEG, Yii, OpenCV, JavaCV , Amazon EC2 API, Amazon S3 API, Google API, Flex, Maven, Spring, git, SVN
- Software Skills : Adobe Premiere Pro, Adobe Photoshop
- Operating Systems :Windows, Linux, Android
- Integrated development environment : Eclipse, IntelliJ, PhpStorm, Flash Builder

## PROFESSIONAL EXPERIENCE

### Software Engineer, Aurus Network , June 2013 to Present

- **Desktop Streamer Windows Application for live streaming and recording of PC screen (Team Size 1)**
  - Application was designed to help teachers to share their presentations to live audience
  - Used **Java** and **JavaFX** for programming and GUI designing of the application
  - **Screen Capture Recorder** was used for creating a virtual device from desktop screen
  - **FMLE (Flash Media Live Encoder)** was used for live streaming to a **Wowza Media Server**
  - **NSIS (Nullsoft Scriptable Install System)** was used for making windows installer
- **Windows Application for H.264/AAC Video Encoding and Uploading to FTP Server (Team Size 1)**
  - Application was designed to encode and upload a batch of videos using **Java** and **JFX**
  - Local compression of videos saved upload time and bandwidth of users
  - Used **FFMPEG** for video compression and java apache FTP library for uploading files
  - Used java **multithreading and concurrency** for simultaneously performing compression and upload tasks
  - Used **SQLite** saving status of upload jobs, so that they could be resumed from their previous state in case of machine shutdown or loss of network
- **XMPP controlled Android application for live video streaming (Team Size 2)**
  - My responsibility was to work on Audio/Video capture from device and compression in **FLV1 (H.263)/AAC** format
  - Used **JavaCV, JavaCPP (OpenCV and FFMPEG wrappers for android)** along with android API to capture compress and **live stream** audio video to **Wowza Media Server**
  - Implemented logging to a remote server via socket appender to get real time device logs
  - Implemented file encryption/decryption to prevent clients from obtaining compressed videos
  - Compiled **FFMPEG** for android to enable android device to perform video processing on raw files
  - Implemented SMS notification service using Exotel API
- **Developed a Video Transcoding server on Amazon EC2 C1-medium linux instance (Team Size 1)**
  - Designed frontend for uploading raw video files to the http server using Yii framework.
  - Compressed raw video files to H264 video codec and AAC audio codec using **FFMPEG** as video processing library and **PHP** for server side scripting
  - Implemented **Presenter Tracking in a Classroom Environment** to capture a fixed pixel window around teacher using **Open-CV** image processing library and **Viola Jones face detection algorithm**
  - This feature could also take a live rtmp stream as input and implement tracking and re-stream the video
  - Used **Amazon EC2 PHP-API** for starting server on demand and stopping it when not in use
  - Features for **editing, joining and cropping** videos were also implemented

- **Android AIR/Flex application for live video streaming (Team Size 1)**
  - Developed Android application to stream live camera feed from any device to a RTMP streaming server
  - Used Adobe AIR and Flash Builder for development
  - Used Sorenson Spark video codec and Nelly Moser audio codec
- **Other Projects**
  - Feature development and maintenance of web server running on **Yii-Bootstrap** (PHP framework)
  - Developed module for disconnecting users from **Wowza Media Server** on HTTP request
  - Developed data migration server to transfer files between Amazon S3 buckets

## B. TECH PROJECT

### Project Title : Multiple Face Detection and Recognition using Eigen Faces (Using Matlab)

- Acquired a training set of face images, resampled them to a common resolution
- Generated a set of **eigenfaces** by performing **Principal Component Analysis**
- Detected all **the possible face regions** image using **color segmentation** and **viola jones algorithm** and segregated them to a common resolution
- Transformed those images to eigen face components and got resulting weights vector
- If the **Euclidean distance** between new and other known average face was below the threshold value , we concluded that new image is a face
- Selected detected faces one by one and classified the weight pattern as either known person or unknown
- Tried face detection using **Template Matching** but it proved to be less accurate than above mentioned technique

## INTERNSHIP AT TATA STEEL , JAMSHEDPUR FROM 7<sup>th</sup> MAY to 6<sup>th</sup> JULY 2012

### Project Title : Power Consumption Reduction in Hot Strip Mill

- Explored the ideas for power consumption reduction
- **Prioritized** the ideas on the basis of impact and payback time
- Explored the scope for implementation of **Variable Frequency Drives** and **Static VAR Compensators**
- Studied the operation of Laminar Cooling Pump House and Descaling Pumps
- Devised the control parameters for controlling VFD using water level sensors and heat sensors for Laminar Cooling Pump House and Descaling Pumps respectively
- The project resulted in power saving of **14.28\*(10<sup>6</sup>) kWh**
- Power Saving resulted in monetary saving of **Rs. 4.14 Crore**

## SUMMER PROJECT UNDER EE SUMMER CAMP, IIT KANPUR , MAY 2011

### Project Title : Face Detection From a Single Face Image

- Used **Color Segmentation technique** to detect skin regions in the given **RGB** image using **YCbCr** color space for Skin Tone detection, giving a binary image with white regions representing skin regions
- It was followed by Image Segmentation to separate face region from other white blobs in the binary image

## SCHOLASTIC ACHIEVEMENTS

- Secured All India Rank 1105 (**TOP 0.3%**) in **IIT-JEE** 2009 among 4,00,000 participants
- Secured All India Rank 1565 (**TOP 0.2%**) in **AIEEE** 2009 among 8,00,000 participants

## RELEVANT COURSES

Fundamental of Computing, Introduction to Electronics, Signals Systems and Networks, Digital Signal Processing, Microelectronics-1, Microelectronics-2, Electromagnetic Theory, Power Electronics, Solid State Devices-1, Control System Analysis, Principles of Communication, Digital Electronics and Microprocessor Technology, Probability and Statistics

## EXTRA CURRICULAR ACTIVITIES

- Participated in video making competitions of Spectrum
- Played various sports like badminton, table tennis, power lifting in inter and intra hall sports competitions
- Attained Yellow Belt in Taekwondo

## INTERESTS AND HOBBIES

- Fitness training and swimming
- Voracious reader of fitness articles