Akshat Dave

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EDUCATION

Program	Institution	%/CGPA	Completion
Dual Degree in Electrical Engg. (Minor in System Engg.)	Indian Institute of Technology Madras, Chennai, India	**8.74**/10	2017
Semester Exchange (7th semester)	KTH Royal Institute of Technology, Stockholm, Sweden	**9.00**/10	2015
XII(CBSE)	SGS AMNEM School, Indore	**94.60** %	2012
X(CBSE)	St. Paul's H. S. School, Indore	**9.80**/10	2010

SCHOLASTIC ACHIEVEMENTS

- Master's thesis proposal awarded *Qualcomm Innovation Fellowship 2016* which provides **1 million INR** funding to the research lab and full mentorship by **Qualcomm Research**
- Recipient of *Svaagata*, an Erasmus Mundus Scholarship of **1000 euros** per month for **Semester Exchange** in Europe. Pursued the seventh semester at *KTH Royal Institute of Technology, Stockholm, Sweden*
- Secured All India Rank **845** in IIT-JEE 2012 amongst **0.48 million** participants
- Secured All India Rank **212** in AIEEE 2012 amongst **1.1 million** participants
- Selected in Regional Mathematics Olympiad and in first round of National Physics Olympiad and National Chemistry Olympiad in 2012
- Awarded KVPY **National Scholarship** for Basic Sciences in 2011
- Secured All India Rank **17** in National Cyber Olympiad, 2010 and AIR **13** in National Science Talent Search Examination in 2010
- Awarded **General Proficiency** Prize in school from class 3rd to 10th

RESEARCH PUBLICATIONS

- **Akshat Dave**, Anil Kumar Vadathya, Kaushik Mitra, "Compressive Image Recovery Using Recurrent Generative Model", *submitted to Computer Vision and Pattern Recognition (CVPR) 2017* (paper)
- **Akshat Dave**, Anil Kumar Vadathya, Kaushik Mitra, "Deep Generative Networks For Image Processing", *Workshop by Interdisciplinary Lab on Data Sciences (ILDS), IIT Madras 2016* (poster)
- Akshay K. Gulati, Shubham Chavan, **Akshat Dave**, et al., "IITMSAT Communications System - A LeanSat Design Approach", *3rd IAA Conference on University Satellites Missions & CubeSat Workshop 2015* (paper)

RELEVANT COURSEWORK

- Machine Learning
- Data Mining
- Computational Photography
- Multivariate Data Analysis
- Networks and Systems
- Probability and Stochastic Processes
- Introduction to Data Structures and Algorithms
- Image Analysis and Computer Vision
- Image Signal Processing
- Kernel Methods in Pattern Analysis
- Analog and Digital Signal Processing
- Process Optimization
- Digital Signal Processing
- Complex Network Analysis

PROJECTS AND INTERNSHIPS

- **Master's Thesis: Deep Recurrent Generative Networks** *May 2016 - till date*

  Guide: Dr. Kaushik Mitra

  - Proposed a novel technique to apply deep learning based **generative models** for solving different problems in the field of image processing, compressive image sensing and computational photography
  - **Tractable** and **scalable** modelling of natural image statistics using **recurrent** neural networks
  - Long short-term memory (**LSTM**) units used to capture long term dependencies in visual data
  - **Versatile** visual priors are learned, which can be directly applied to solve various **image recovery** tasks such as denoising, deblurring, inpainting etc using maximum-a-posteriori principle

- **Generative Colorization of Grayscale Images** *Oct 2016 - till date*
  - Implemented the current state-of-the-art discriminative model for colorization in **Torch**
  - Deep convolutional generative adversarial network used to model **conditional probability distribution** of the colorized image given the grayscale image and latent vector.
  - Introduced **novel** architecture to incorporate stochasticity in the output
  - **Generative model** has the ability to produce different plausible colorizations for the same grayscale input

- **Summer School on Deep Learning for Computer Vision** *Jul 2016*
  - Participated in a 7 day hands-on workshop organized by Centre for Visual Information Technology (CVIT) at International Institute of Information Technology, Hyderabad
  - Successfully implemented architectures such as CNNs, RNNs, autoencoders etc. in **Torch** framework
  - Analyzed the recent advances in deep learning methods for vision applications

- **Intelligent Traffic Light System using Reinforcement Learning** *Jun 2015 – Jul 2015*
  - Idea, model and simulation presented at Qualcomm Intern IdeaQuest 2015
  - Formulation of traffic light system with known connections as a **multi-agent network**
  - **Q learning** used to optimize car stoppage times by considering different penalty parameters
  - **Simulation** of the model for an ideal grid scenario implemented in python using **pybrain** framework

- **Wireless Indoor Positioning** *Sep 2015 - Jan 2016*

  Guide: Dr. Satyam Dwivedi
  - Application of **distance ranging** DecaWave DW1000 radio transceiver for indoor positioning
  - Analysis of the APIs used in software implementation of the **time-of-flight** based distance ranging
  - Design and implementation of **positioning algorithms** using Matlab

- **Qualcomm Summer Internship** *May 2015 – Jul 2015*
  - Developed an understanding of different **wireless networks** and the IEEE 802.11 WLAN protocol
  - Analyzed and modified the **firmware** for Wi-FI used in Qualcomm mobile chips
  - Designed an **error response framework** which handles errors in host and firmware communication

- **Crowd Detector using Computer Vision** *Dec 2014 - Jan 2015*
  - **Overhead vision** approach to determine the number of persons standing in a specified area
  - **OpenCV** framework used to implement filtering, gradient and threshold algorithms
  - Crowd density visualized by changing the color intensity of LEDs using **Arduino**

- **IIT Madras Student Satellite Project (IITMSAT)** *Dec 2013 - May 2015*
  - An active member of the communications module of the project
  - Created a **flowchart** of operations for the satellite-ground station communication protocols
  - Developed **master code** to encompass the sequential execution of tasks by the on-board trasnceiver

SKILLS

Programming Languages	C, C++, Python, Matlab, Lua, R
ML frameworks	Caffe, Torch, Tensorflow, pylearn2, openCV
Design Tools	Adobe Photoshop, Illustrator, Light room, After Effects, Autodesk 3DS Max
Utilities	LaTeX, MS Office

POSITIONS OF RESPONSIBILITY

Core Team Member, Concept and Design, Shaastra 2015
(IITM' s annual ISO certified technical fest)

- Nominated by the Dean of Students to **train and lead 45 students** across 4 teams
- Responsible for the fest' s **aesthetic appeal** through social media, ambience, merchandise and photography — Jun ' 14- Jan ' 15
- Introduced **techno-ambiance –** a unique fusion of art and technology through interactive outdoor models
- Increased the fest' s social media presence **3 times** compared to the previous years

Manager, IPALs, (IITM' s International Relations team)

- Guiding international exchange students on campus and organizing activities to promote international culture — May ' 16 – till date

Hostel Head Volunteer for Literary Activities — Aug ' 13 - May 14

Graphic Design Coordinator for Shaastra 2014 and Saarang 2014 — Aug ' 13 - Dec 13

Alumni Telethon Coordinator — Aug ' 13 – Dec 13

EXTRA-CURRICULAR ACTIVITIES

Graphic Design

Photography

Squash

- Worked as a freelancer for 99designs.com and Sheermedia
- Designed the winning entry for Creative Writing, Lit-Soc 2015
- Manager of the Chennai Photowalkers club.
- Hostel team member for Schroeter 2013