

Aman Raj

B.Tech. , Department of Electronics & Communication Engineering
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EDUCATION

DELHI TECHNOLOGICAL UNIVERSITY (FORMERLY DCE)

B.TECH IN ELECTRONICS & COMMUNICATION ENGINEERING

May 2016 | Delhi, India

Aggregate: 82.52%
(2012-2016)

SPRING MEADOWS PUBLIC SCHOOL

Class XII, CBSE : May 2012 | Delhi, India

Aggregate : 95.0%, 1st in School

Class X, CBSE : May 2010 | Delhi, India

CGPA : 9.8/10, 2nd in School

LINKS

LinkedIn:// [amanrajdce](#)

Github:// [amanrajdce](#)

Quora:// [Aman-Raj-8](#)

RELEVANT

COURSEWORK

UNDERGRADUATE

Advance Engineering Mathematics
 Probability & Stochastic Processes
 Control Systems

Microprocessor & Interfacing

Embedded Systems

Computer Architecture

Programming Fundamentals

Robotics & Object Tracking

Pattern Recognition

Digital Image Processing

Computer Vision

Udacity:

Introduction to Parallel Programming
 by John Owens, David Luebke

Coursera:

Machine Learning

by Andrew Ng

Neural Networks for Machine Learning

by Geoffrey Hinton

Algorithms: Design and Analysis

by Tim Roughgarden

Machine Learning

by Pedro Domingos

WORK EXPERIENCE

FACEBOOK | MACHINE LEARNING ENGINEER

August 2016 – Present | Mentor: Ramesh Raskar

- Developing machine learning systems for Large Scale Machine learning problems in computer vision.

SUPPLYAI (DATACULTURE INC.) | DATA SCIENTIST

Dec 2015 – August 2016

- Worked as lead engineer building software systems driven by predictive intelligence for logistics in supply chain. Skills gained in Data Analysis, Data Munging, Data Visualization, Feature Engineering, Feature Selection, developing data-driven predictive models.

RIGHT RELEVANCE INC. | DATA SCIENCE INTERN

Dec 2015 – Feb 2016 | Mentor: Vishal Mishra

- Developed fixes in apache-storm topology for mining and cleaning of urls from tweets for article extraction, writing custom article extraction rules for some urls.

RESEARCH EXPERIENCE

CARNEGIE MELLON UNIVERSITY | SUMMER INTERN

Jun 2015 – Aug 2015 | Mentor: Dr. Sebastian Scherer

- Developed a multi-scale deep convolutional neural network based algorithm for semantic labeling of 2D scenes for scene understanding.
- Used it for semantic classification of point cloud data for the purpose of perception and path planning for a UAV.

CARNEGIE MELLON UNIVERSITY | WINTER INTERN

Dec 2014 | Mentors: Prof. Bhiksha Raj & Dr. Rita Singh

- Created **Comic Polyglot** in **IPTSE Winter School 2014**, a neural network based system that translates raw mangas into English.
- Used a combination of neural networks & MSER algorithm to detect text-regions with subsequent translation with an OCR-engine.

DELHI TECHNOLOGICAL UNIVERSITY | RESEARCH ASSISTANT

Jun 2013 – May 2016 | Mentors: Prof.Rajesh Rohilla & Prof.S.Indu

- Developed **HistExtract**, a system that extracts highly correlated text from historical inscription images, a part of "Digital Heritage" project sponsored by Department of Science & Technology, Govt. of India.

DELHI TECHNOLOGICAL UNIVERSITY | RESEARCH ASSISTANT

Oct 2012 – May 2013 | Mentor: Prof. N.S. Raghava

- Lunabotics Mining Project**, developed a variety of embedded systems like design and fabrication of various electronic circuits, designing the telemetry system, digging & dumping mechanism. Project team participated in NASA Lunabotics Mining Competition 2013.

UNDERGRADUATE PROJECTS

FPGA BASED ABANDONED OBJECT DETECTION

Jan 2015 – Mar 2015

- Designed a standalone system using Xilinx FPGA that uses a static background modeling algorithm and identifies any object lying abandoned for a given time.

SKILLS

PROGRAMMING

Programming Languages:

- C\C++ • Python • Java • Scala
- Lua • LaTeX • Matlab • Octave
- Javascript • Unix Shell Scripting

Software/Others:

- OpenCV • Caffe • Chainer
- H2O.ai • Lasagne • Torch
- Theano • Qt • AWS • Git
- Apache-Storm • Apache-Spark
- Xilinx Vivado HLS • MongoDB
- MySQL

DEVELOPMENT BOARDS

- Xilinx Zynq-7000 Imaging Kit
- Intel Atom • BeagleBone Black
- Arduino Due • Raspberry Pie

TRAINING

Nvidia GPU Computing & CUDA Session
Training in BeagleBone Black
Training in using VxWorks on Xilinx FPGA

TALKS & SEMINARS

Delivered a talk on my research on "Scene Understanding for Robots using RGB-Depth Information", **Robotics Institute CMU** on 2nd August, 2015.

Oral Presentation of research paper in **ICCTICT 2016**.

EXTRA-CURRICULAR ACTIVITIES

Volunteer Coordinator during Annual Alumni Meet 2013 and 2014 in college.

Teaching assistant in NGO Touch-India Trust-provides education to slum kids.

RESEARCH INTERESTS

Machine Learning
Computer Vision
Data Science

ROBOT NAVIGATION SYSTEM USING KINECT

Aug 2014 – Nov 2014

- Built navigation system for a robot using OpenCV and OpenKinect libraries, that uses disparity map along with pixel intensity calibration to compute the distance of an object/obstacle from the Xbox Kinect.
- The wheels of robot are propelled to avoid possible collision with obstacle

3B BIOMETRICS SECURITY SYSTEM May 2014 – July 2014

- Developed a system prototype based on BeagleBone Black for purpose of remote monitoring and authorizing access to Robotics Lab in DTU.
- This system sends lab monitoring information to the lab-incharge on WhatsApp.

FACE DETECTION & TRACKING

Dec 2013 – Jan 2014

- Created a robust algorithm that combines SIFT and CamShift algorithm to detect and track a human face in real time. The tracker correctly tracked face for more than 90 % of frames at 15 FPS on Intel core i5-2450M processor.

TEXT EXTRACTOR DEVICE

Aug 2013 – Nov 2013

- Developed a hand-held device that takes images from an on-board camera and extract texts from it using tesseract-ocr engine running on BeagleBone Black and shows the text on-screen with an accuracy of 92%.

PUBLICATIONS

- N. Jayanthi, Ayush Tomar, **Aman Raj**, S. Indu, and Santanu Chaudhury. "Digitization of Historic Inscription Images using Cumulants based Simultaneous Blind Source Extraction". In Proceedings of ICVGIP 2014. ACM, Article 51, pp. 1-6.
- S. Indu, Ayush Tomar, **Aman Raj**, and Santanu Chaudhury. "Enhancement and Retrieval of Historic Inscription Images." In Computer Vision-ACCV 2014 Workshops, pp. 529-541. Springer International Publishing, 2014.
- **Aman Raj**, P. Selvan, A. Dixit, Gaurav Bansal, H. Solanki and F. Abbas, "Comic Polyglot", CMU IPTSE Winter School Poster Session, 2014. (**award**)
- **Aman Raj**, Daniel Maturana, and Sebastian Scherer. "Multi-Scale Convolutional Architecture for Semantic Segmentation". Robotics Institute Technical Reports. CMU-RI-TR-15-21, 2015.
- R. Rohilla, **Aman Raj**, Saransh Kejriwal, and R. Kapoor. "FPGA Accelerated Abandoned Object Detection". In Proceedings of ICCTICT, 2016.

AWARDS AND ACCOMPLISHMENTS

- **Best Project Award** for the research project "Comic PolyGlot" in CMU IPTSE Winter School 2014.
- **CSSS Scholarship 2012**: Awarded by CBSE(Govt. of India) to meritorious students for distinctive performance in All India Senior Secondary Examination.
- **Award of Recognition** for contribution to DCE-DTU Alumni Association as Volunteer coordinator, 2014.
- **Awarded Silver Certificate** in HDFC Bank Meritus Scholarship, 2009.
- **Academic Excellence Award** for the year 2009-10 and 2011-12 in school for securing first position in final examination.
- Selected for **Inspire Science Camp** organized by Department of Science & Technology, Govt. of India in 2011, merit based selection.
- Obtained an All India Rank-**312** in **National Science Talent Search Examination** in year 2012.