

Aman Raj

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EDUCATION

UNIVERSITY OF CALIFORNIA SAN DIEGO

M.S. IN ELECTRICAL &
COMPUTER ENGINEERING
(Machine Learning & Data Science)
2018-2020 | GPA: 3.73/4.0

DELHI TECHNOLOGICAL UNIVERSITY (DCE)

B.TECH IN ELECTRONICS &
COMMUNICATION ENGINEERING
2012-2016 | Aggregate: 82.52%

SPRING MEADOWS PUBLIC SCHOOL

Class XII (CBSE) | 2012
Aggregate : 95.0%, 1st in School

LINKS

Google Scholar:// [Aman Raj](#)
Linkedin:// [amanrajdce](#)
Github:// [amanrajdce](#)

COURSEWORK

ECE225: Prob & Stats for Data Science
ECE143: Programming for Data Analysis
ECE269: Linear Algebra and Application
ECE271A: Statistical Learning I
CSE252A: Computer Vision
CSE252C: Vision & Learning
CSE250B: Learning Algorithms
CSE291: Advances in 3D Reconstruction
CSE256: Statistical NLP

TECHNICAL SKILLS

Programming Languages:
Python • C • C++ • Java • Scala • Lua
LaTeX • Matlab • Octave • Javascript

ML Frameworks/Others:
Caffe2 • PyTorch • Tensorflow • Torch
Chainer • H2O.ai • Theano • OpenCV
AWS • Git • Apache-Storm • MongoDB
Apache-Spark • SQL

TEACHING ASSISTANT

CSE12: Data Structure & Object
Oriented Design

PROFESSIONAL EXPERIENCE

APPLE INC.

DEEP LEARNING RESEARCH ENGINEER

JULY 2020 – PRESENT

- Develop core computer vision technologies that are used across Apple's ecosystem of devices and services.
- Machine learning algorithm design and implementation, benchmarking, prototyping and integrating the technology into next generation of apple products and services.

MACHINE LEARNING INTERN

JAN 2020 – MARCH 2020

- Algorithmic research to develop state of the art computer vision technologies for photos and videos understanding.

SAMSUNG LAB

DEEP LEARNING INTERN

JUNE 2019 – DEC 2019

- Research and development of semi-supervised and unsupervised methods for depth estimation in images and videos in the wild.
- Proposed a joint supervised, unsupervised and weakly supervised learning framework for monocular depth estimation. Work was accepted in CVPR 2020.

FACEBOOK INC.

SOFTWARE ENGINEER

AUG 2016 – AUG 2018

- Worked in **Applied Machine Learning (AML)** group. Designed and implemented distributed learning software pipeline in Caffe2 for large-scale training on images which reduced training time from days to hours.
- Worked on project **Robocodes**, which received significant media attention and awards. Responsible for algorithmic research on designing CNN based methods to extract useful information from satellite images.

SUPPLYAI INC.

DATA SCIENTIST

DEC 2015 – JULY 2016

- Designed and implemented predictive intelligence in the company's first product Velo. Built the backend of software using H2O.ai with a mix of Scala, Java, Python.
- Skills gained in Data Analysis, Data Munging, Data Visualization, Feature Engineering, Feature Selection, developing data-centric software pipeline.

AWARDS AND ACCOMPLISHMENTS

- **The Jack Dangermond Award – Best Paper 2018**, in *ISPRS Journal of Photogrammetry and Remote Sensing*, 2018.
- **Best Paper Award**, in CVPR 2017 Earthvision Workshop.
- **Best Project Award** for "Comic PolyGlot" in CMU Winter School 2014.
- **CSS Scholarship** by Govt. of India for undergraduate studies, 2012.
- **All India Rank 312**: in National Science Talent Search Examination, 2012.
- **Academic Excellence Award** in high school for 2011.
- **Silver Certificate** in HDFC Bank Meritus Scholarship, 2009.

ACADEMIC EXPERIENCE

UNIVERSITY OF CALIFORNIA SAN DIEGO

GRADUATE STUDENT RESEARCHER

SEPT 2018 – JUNE 2020

- Research and development of state-of the art semi-supervised and unsupervised learning algorithms to understand depth, motion and semantic information in videos for autonomous driving car.

CARNEGIE MELLON UNIVERSITY

RESEARCH INTERN

DEC 2014 – AUG 2015

- Worked in **AirLab** at Robotics Institute with **Prof. Sebastian Scherer**, research on designing novel CNN based methods for indoor and outdoor scene understanding using semantic segmentation.
- Worked on **Comic Polyglot** project with **Prof. Bhiksha Raj** in **CMU Winter School 2014**, implemented a convolutional neural network-based system for detecting text ROIs in manga comic strips followed by a neural translation.

PUBLICATIONS

- **Aman Raj**. "Learning Augmentation Policy Schedules for Unsupervised Depth Estimation". **MS Thesis**
<https://escholarship.org/uc/item/1p85x50q>.
- Haoyu Ren, **Aman Raj**, Mostafa El-Khamy, Jungwon Lee. "SUW-Learn: Joint Supervised, Unsupervised, Weakly Supervised Deep Learning for Monocular Depth Estimation". **CVPR 2020** workshops.
- Yue Meng, Yongxi Lu, **Aman Raj**, Samuel Sunarjo, Rui Guo, Tara Javidi, Gaurav Bansal, Dinesh Bharadia. "SIGNet: Semantic Instance Aided Unsupervised 3D Geometry Perception". **CVPR 2019**, *arXiv:1812.05642*.
- Ilke Demir, Forest Hughes, **Aman Raj**, Kaunil Dhruv, Suryanarayana Murthy, Sanyam Garg, Barrett Doo, Ramesh Raskar. "A Holistic Framework for Addressing the World using Machine Learning". **CVPR 2018** workshops.
- Ilke Demir, Forest Hughes, **Aman Raj**, Kaunil Dhruv, Suryanarayana Murthy, Sanyam Garg, Barrett Doo, Ramesh Raskar. "Generative street addresses from satellite imagery". International Journal of Geo-Information, **ISPRS 2018**. (award)
- Ilke Demir, Forest Hughes, **Aman Raj**, Kleovoulos Tsourides, Divyaa Ravichandran, Suryanarayana Murthy, Kaunil Dhruv, Sanyam Garg, Jatin Malhotra, Barrett Doo, Grace Kermani, Ramesh Raskar. "Robocodes: Towards Generative Street Addresses from Satellite Imagery". **CVPR 2017** workshop on Earthvision. (best paper award)
- R. Rohilla, **Aman Raj**, Saransh Kejriwal, and R. Kapoor. "FPGA Accelerated Abandoned Object Detection". IEEE's International Conference on Computational Techniques in Information and Communication Technologies (**ICCTICT 2016**).
- **Aman Raj**, Daniel Maturana, and Sebastian Scherer. "Multi-Scale Convolutional Architecture for Semantic Segmentation". Robotics Institute Technical Reports. CMU-RI-TR-15-21, **CMU 2015**.
- 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. (best project award)

PATENTS

- System and Method for Deep Machine Learning for Computer Vision Applications.
Haoyu Ren, Mostafa El-Khamy, Jungwon Lee, **Aman Raj** - US Patent App. 16/872,199, 2021

PROFESSIONAL SERVICE

- Reviewer for **IEEE Transactions on Image Processing**, 2018