Aman Raj

https://amanrajdce.github.io • amanrajdce@gmail.com • Linkedin:// amanrajdce

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%, 1^{st} 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 H20.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 Unsuperivsed 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)**

PROFESSIONAL SERVICE

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