Vibhor Kumar

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Education

California Institute of Technology [Caltech], *B.S. Computer Science, 3.8/4.0* *Sep. 2012 - Jun. 2016*

- At Caltech, I received my B.S. with Honors in CS, with a side-focus on Neuroscience. I worked on both industry and research projects in a variety of spaces, including Computer Graphics, Natural Language Processing, Cognitive Science, Computational Linguistics, and Machine Learning, including internships at Samsung and Apple, and a study abroad research studentship at Tokyo Tech.

Work and Experience

Visa Research, *Research Engineer* *July 2016 - Present*

- Working on Big Data Analytics and Machine Learning (esp. Deep Learning) projects using structured datasets that give remarkable insight into financial trends and human behavior.
- Responsible for unifying data from various sources at Visa, and making some of the necessary transformations and derivations for training Deep Learning models.

Janelia Research Campus (HHMI), *Research Consultant* *October 2015 - January 2016*

- Using raw visual data of the brain, collected from electron microscope scans of the fly brain, to learn about the physical structures and connectivity of the networks of neurons in the brain.
- Developing project-specific improvements to pre-existing Convolutional Neural Network libraries for increased efficiency and accuracy.

Tokyo Institute of Technology, *Research Exchange Student* *June 2015 - August 2015*

- Explored Cognitive Neuroscience from the perspective of Computer Science by carefully analyzing fMRI data, collected from language tasks, using standard statistical and Machine Learning techniques.
- Devised a novel Machine Learning paradigm to apply the technique of MVPA to our unique dataset.

Apple, *Platform Architecture - Graphics Research Intern* *June 2014 - September 2014*

- Worked with the exploratory graphics team to provide recommendations for future graphics hardware.
- Developed novel graphics software algorithms for efficient and visually appealing improvements over the current pipeline, and pre-existing techniques.

Selected Research Projects

Latent Transaction Feature Discovery with Deep Generative Models, *Visa Research* *Present*

- Using deep generative models (VAE, GAN, and hybrids) trained on transaction data with continuous and categorical features for synthetic transaction generation and the learning of latent features.

Shopping Influencers for Targeted Marketing, *Visa Research* *Present*

- Won the 2016 Visa Global Hackathon by inferring relationships from raw transaction data and identifying influencers. Implemented whole pipeline using Apache Pig and a novel MapReduce formulation.

Neuronal Tracing in Brains using CNNs, *Janelia Research Campus* *Oct. 2015 - Jan. 2016*

- Analyzing raw electron-microscope scans of the entire Drosophila fly brain using CNNs in a Computer Vision framework to efficiently and accurately segment millions of synaptic connections.

Skills and Awards

Skills: Python, Java, C/C++, Haskell, TensorFlow, Caffe, Apache Pig/Hive, Hadoop MapReduce, CUDA, OpenCV, Matlab, Bash Scripting, LaTeX, Markdown, Git and Github (**see above**), Japanese

Awards: 1st Place at Visa Global Hackathon 2016 (*Fall 2016*), Tokyo Institute of Technology International Research Opportunities Program (TiROP): Caltech Representative (*Summer 2015*), Caltech Scholarships (Stauffer, Marion Gene Vincenti, Frances and Howard Vesper), 1st place at Google Games Coding (*Spring 2013*), 11th Place Regional ACM Collegiate Programming Contest (*Winter 2012*),