Sriram Vasudevan

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Education

School of Computer Science, Carnegie Mellon University — *Pittsburgh, USA*
Master of Science; ***Major:*** *Computer Science* — *December 2016*

- **Key Courses:** Machine Learning, Computer Vision, Algorithms

Indian Institute of Technology Madras — *Chennai, India*
Bachelor of Technology (Honors); ***Major:*** *Computer Science and Engineering* — *May 2015*

- **CGPA:** 9.18/10
- **Key Courses:** Artificial Intelligence, Reinforcement Learning, Natural Language Processing, Searching & Indexing in Large Datasets, Social Network Analysis, Advanced Algorithms & Data Structures, Graph Theory, Probability, Linear Algebra

Professional Experience

Google Summer of Code *(UAV Drone Photogrammetry)* — *Summer 2015*

- Worked with researchers from Quantitative Engineering Design and Columbia University on UAV photogrammetry being performed by the Africa Soil Information Services, funded by the Bill and Melinda Gates Foundation.
- Inspected data processing workflow used by closed source done processing software, and helped select from among open source alternatives for each component in the workflow.
- Chained alternatives and implemented parts from scratch to produce an open source workflow to replace the original.

Microsoft Research India *(S2G: Enabling Screen to Glass Near-Vision Communication)* — *Summer 2014*

- **Worked with cutting-edge smartglasses technology** to devise a sight-based optical side channel, to enable screen to glasses one-way information transmission, that is otherwise imperceptible to the human eye.
- Experimented with a variety of methods including LSB, DCT, DFT and wavelet-based encoding, as well as other techniques for steganographic digital watermarking, such as RGB, YCrCb and HSV channel encoding.
- Added in error recovery codes such as Solomon-Reed on top of the implemented side channel to reduce bit error rates to under 2%, and successfully obtained a data throughput rate of over 20kbps.

Alpha Cloud Labs *(Brand Detection in Realtime Video Streams)* — *Summer 2013*

- Benchmarked the speed and efficiency of various template-matching algorithms such as SURF, SIFT and FLANN, vis-à-vis different machine learning algorithms like LBP and HAAR.
- **Developed a scalable, parallelised machine learning based framework** for brand detection in live sports footage, to generate realtime analytics, and deployed it on Amazon EC2 instances.
- Developed an algorithm to auto-rotate scanned documents based on image processing, Optical Character Recognition and classification of characters based on their properties.

Research and Academic Projects

Tensor Models of Meaning for Compositional Distributional Semantics — *Prof. Sutanu Chakraborti, Spring 2015*

- Researched methods to **better represent meanings of words by making use of tensors** and developed a framework to aid in the composition of such tensors to obtain meanings of larger phrases.

Learning In An Ultrasmall World — *Prof. Balaraman Ravindran, Spring 2015*

- Proposed incorporating the scale free property into MDPs as a method to construct options and demonstrated the efficacy of the approach on three domains.

Exploring Diversity in Reverse Top-k Queries — *Prof. Sayan Ranu, Fall 2014*

- **Explored diversity implementations in reverse top-k queries**, which are typically utilized by backend entities such as manufacturing and sales, to garner insights from collected Big Data regarding factors that influence products sold.

Expanding Trust-Based Avenues for Social Recommendation — *Prof. Balaraman Ravindran, Spring 2014*

- Tackled the issue of **improving recommendation engines** by making use of a trust network on top of an existing e-commerce network, to augment suggestions.
- **Won 1st place** at Papyrus of Ani, a paper presentation competition conducted by Model Engineering College, Kochi, India.

Context-Sensitive Spellchecker — *Prof. Sutanu Chakraborti, Fall 2014*

- The algorithm makes use of the Naive Baye's Rule, with priors being computed from an extensive corpus during training.
- Likelihood values are estimated by computing the edit distance between the incorrect word and the suggestion, as well as performing a DFS on the error-graph induced by the Levenshtein Distance computation.

Othello Bot — *Prof. Deepak Khemani, Fall 2013*

- Built an Artificially Intelligent Reversi playing bot that made use of the alpha-beta search algorithm along with an objective function comprising of game-specific heuristics, and **placed first among over 50 bots at the national level**.
- The bot also made use of thread-based parallelisation and a dynamic depth setting to speed up search tree exploration.

Sentiment Analysis on Amazon Product Reviews — *Prof. Balaraman Ravindran, Fall 2013*

- Built a classifier that predicted the rating of a user for a product given the preprocessed text of his/her review.
- **It won second place** in the course contest among all the classifiers built by students of the course.

Skills

- **Languages:** C, C++, Python, Java, Bash, MATLAB, R, x86 ASM, SQL, PHP, JavaScript, HTML, CSS, LaTeX
- **Frameworks:** Django, Git, numpy, scikit-earn, NLTK, Weka, OpenCV, MySQL, Amazon EC2, PostFlight Terra 3D, MeshLab

Academic Honors and Awards

- **Awarded scholarships worth $15,000** by the Tata and Mahindra foundations. *2015*
- **Within the top 1%** in the National Standard Examination in Physics, from over 35000 candidates. *2011*
- **Selected as a scholar** for the Kishore Vaigyanik Protsahan Yojana (KVPY) scholarship. *2010*
- **Consistent recipient of the General Proficiency (rank 1) for 10 years** at school. *2010*
- **Recipient of the Srinivasa Ramanujan Maths Talent Award** for outstanding Merit in Mathematics *2009*

Co-Curricular Activities

- **Placed 1st in the Machine Learning Contest** at Exebit 2014, IIT-M's national-level Computer Science technical fest.
- **Contributed to the development of the open-source LibreOffice Calc**, by implementing table sheets and chart sheets.
- **Built an app at the Yahoo! 2013 hackathon** that uses NLP on real-time tweet streams to get crowd-sourced movie ratings.
- **Built a news aggregator at the PennApps F2015 hackathon** that clusters web articles based on social issue and urgency.
- **Placed 1st** at the PennApps Fall 2015 hackathon quiz, competing against around 2000 other participants.