SRIRAM VASUDEVAN | CS11B058

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EDUCATION

Program	Institution	%/CGPA	Year of completion
B. Tech (Hons.) in Computer Science and Engineering*	Indian Institute of Technology Madras, Chennai	9.17 (6 semesters)	2015 (expected)
XII	Maharishi Vidya Mandir, Kilpauk, Chennai	95.40%	2011
X	Bhavan's Rajaji Vidyashram, Kilpauk, Chennai	95.40%	2009

INTERNSHIPS

Mobility Networks and Systems Group, Microsoft Research India, Bangalore — *Dr. Krishna Chintalapudi, Researcher*
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, Chennai — *Karthik Samudram, VP Operations*
Maplytiks — *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 machine learning based framework for brand detection in live sports footage, to generate realtime analytics, and deployed it on Amazon EC2 instances.
- Utilised OpenCV extensively for processing footage, and implemented the MapReduce paradigm to make the framework scalable, parallelised and capable of realtime processing.
- Developed an algorithm to auto-rotate scanned documents based on image processing, Optical Character Recognition and classification of characters based on their properties.

RESEARCH EXPERIENCE

On The Quantum Entanglement of Linguistic Vectors — *Prof. Sutanu Chakraborti*
Undergraduate Thesis — *Fall 2014**

- Researching tensor-based representations of both atomic and complex linguistic components in higher dimensional abstract spaces, to represent their inherent syntactic and semantic properties.
- Such a framework would be used to draw parallels between existing quantum and linguistic properties, including the entanglement of subsystems, and the observations thus made would be highly useful in expanding the knowledge of one field based on prior knowledge in the other.

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

- Currently researching 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.
- Diversity in such fields is of primary concern, since one can form a mental picture of the factors involved by merely looking at individual instances of various categories.

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

- Co-authored a paper that aimed to tackle the issue of improving recommendation engines by employing trust-based metrics.
- The technique involved makes use of a trust network on top of an existing e-commerce network, to augment suggestions.
- The paper also explores the idea utilizing users' expertise in specific categories, to reweight their overall trust value.

ACADEMIC PROJECTS

TheJoker – An 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, in Shaastra† 2014.
- The bot also made use of thread-based parallelisation and a dynamic depth setting to speed up search tree exploration.

MacroJava Compiler — *Prof. V. Krishna Nandivada, Fall 2013*

- Built a MacroJava (A MiniJava based grammar with macro definitions) to MIPS compiler in Java, using JTB and JavaCC.
- The flow involved the conversion of MacroJava to MiniJava, typechecking and conversion to an intermediate language called MiniIR, following which subsequent conversions to MicroIR, MiniRA and finally MIPS was done.

SKILLS

- **Languages:** C, C++, Python, Java, Bash, Lisp, LaTeX, MATLAB, R, x86 ASM, SQL, JavaScript, CSS, HTML, PHP, Verilog
- **Frameworks:** Django, Git, SimPy, Xilinx ISE, Flex/Bison, JTB, JavaCC, Weka, OpenCV, Apache Hadoop, Amazon EC2
- Comfortable working in GNU/Linux, OSX and Windows environments.

COURSE WORK

- Data Structures & Algorithms
- Advanced Algorithms
- Language, Machines & Computations
- Language Translators
- Paradigms of Programming
- Principles of Software Engineering
- Principles of Communication
- Computer Networks
- Switching Theory & Digital Design
- Computer Organisation
- Operating Systems
- Computer System Design *
- Introduction to Machine Learning
- Artificial Intelligence
- Introduction to Database Systems
- Social Network Analysis
- Knowledge Representation & Reasoning
- Natural Language Processing *
- Indexing and Searching in Large Datasets *
- Applied Time Series Analysis *

Mathematics and Operations Research

- Calculus I & II – Functions of One and Several Variables
- Basic Graph Theory
- Probability, Statistics & Stochastic Processes
- Linear Algebra & Numerical Analysis
- Discrete Mathematics for Computer Science
- Principles of Economics
- Decision Modelling *

Labs

- Computer Programming Labs (in C and C++)
- Software Engineering Lab
- Computer Networks Lab
- Digital Logic & Design Lab
- Assembly Language Programming Lab
- Operating Systems Lab
- Language Translators Lab
- Computer System Design Lab *

Scholastic Achievements

- Among the top 5 (from a batch of over 800 students) at the end of the first semester, thereby securing a branch change from Chemical Engineering to Computer Science and Engineering — *Fall 2011*
- Secured All India Rank 930 in IIT-JEE and merit qualifications in other entrance exams — *2011*
- Selected as a scholar for the full scholarship to pursue Computer Science and Engineering at the National University of Singapore (NUS) — *2011*
- Secured All India Ranks of 23 and 21 (state rank 3) in the 7th and 10th National Cyber Olympiads, conducted by the Science Olympiad Foundation. — *2008, 2011*
- 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 in the 12th Standard. — *2010*
- Awarded by the Bharatiya Vidya Bhavan Shikshan Bharati for having secured the highest marks in Mathematics (100%) and Social Science (100%) among the students of Bhavan's Schools, in the All India Secondary School Examination (AISSE) — *2009*
- Consistent recipient of the General Proficiency at both Bhavan's Rajaji Vidyashram and Maharishi Vidya Mandir. — *2000 – 2010*
- Recipient of the Srinivasa Ramanujan Academy of 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 and Engineering technical fest, from around 20 teams, and built the top-ranked bot in Automania, an AI Bot Reversi tournament, at Shaastra 2014.
- Placed 4th in the Ericsson IDP Challenge at Shaastra 2014, which saw a nationwide participation of more than 50 teams.
- Led a team of 5 and contributed heavily to the development of the open-source software LibreOffice Calc, by implementing table sheets and chart sheets, as part of a course project.
- Developed a web app in under 24 hours, that makes use of Natural Language Processing on a large, real-time stream of tweets to get a crowd-sourced movie rating, at the IIT Madras HackU 2013 conducted by Yahoo!
- Developed the Godavari Hostel website, and added new features such as an online library and a guestbook, which resulted in a growth of over 400% in the number of visitors to the site.
- Built an ERP (a first of its kind for college fests in the country) to manage finance, resources, hospitality, facilities, sponsorship and event registrations for Shaastra 2013. It was used by 300+ users, securing 50,000 hits and generating a revenue of over ₹1,50,000.

Extra-Curricular Activities

- Won and placed as finalists in several literary events at the intra and inter-school as well as the intra-collegiate level, such as the IIT-M LitSoc Main Quiz, Potpourrie and the IIT-M TechSoc HTW Quiz.
- Participated in and won several writing and oratorical competitions at the intra and inter-school level.
- Was a member of the house basketball team at school, and placed runners up in the inter-house tournament.
- Was actively engaged in basketball as part of the National Sports Organisation (NSO), 2011 – 2012
- Was part of MYTRI (Mobilising Youth for Tobacco Related Initiatives in India), and helped create awareness about the health risks associated with the consumption of tobacco, during 2004 – 2007
- An avid trekker – trekked to various locations, including the Himalayas and Top-Slip.

Positions of Responsibility

Web Operations Supercoordinator, Shaastra 2014 — *2013 – 2014*

- Handpicked to be a part of the Web Operations team as a mentor and consultant.
- Tutored new students and managed advanced server configurations.
- Personally commended by the Dean of Students for services rendered.

Informals Supercoordinator, Saarang 2014 — *2013 – 2014*

- Appointed to lead a team of over 30 as head of the Informals Vertical.
- Managed various events that had budgets of over ₹1 lakh and sponsorship deals with brands such as *TVS Apache*, and co-ordinated with various other departments to take the conceived ideas to fruition.

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* *Ongoing*

† *Shaastra and Saarang are IIT Madras' annual inter-collegiate technical and cultural festivals respectively.*