Akshay Gadre

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Education

Program	Institution	%/CGPA	Year of completion
Dual Degree (B.Tech+M.Tech), Computer Science and Engineering	Indian Institute of Technology Madras	**9.02**	2017
Minor in Operations Research		**10.00**	
XIIth Std. (CBSE)	Kendriya Vidyalaya Ganeshkhind	**94.4**	2012
Xth Std. (CBSE)	Kendriya Vidyalaya Ganeshkhind	**92.4**	2010

Research Publications

A Customizable Agile Approach to Network Function Placement -
Akshay Gadre, Anix Anbiah, Krishna Sivalingam *Submitted to IEEE ICC 2017*

Machine Translating Code Mixed Text: Pain Points and Sweet Spots **May 2016**
Akshay Gadre, Rafiya Begum, Monojit Choudhury, Kalika Bali *3rd WILDRE, LREC 2016*

Network Function Virtualization: A Primer **May 2016**
Akshay Gadre, Krishna Sivalingam *EAI Endorsed Transactions on Future Internet*

Internships

Research Intern – Univ of Massachusetts, Amherst **Mentor: Prof. Arjun Guha|May - July 2016**
Programming Languages and Systems at Massachusetts(PLASMA) Lab *(11 weeks)*

- Performed research on software-defined network super-optimizers
- Worked with physical OpenStack cluster and OpenFlow switches to derive proof of concept of the planned algorithm.
- Developed a robust tool to integrate the above algorithm into modern systems using OpenFloodlight and OpenStack.

Research Intern – Microsoft Research India **Mentor: Dr. Monojit Choudhury|May - July 2015**
Machine Learning, Natural Language Processing and Multilingual Systems Group *(12 weeks)*

- Studied state-of-the-art Machine Translation(MT) system evaluation metrics and developed a procedure to compare the performances of MT systems on code-mixed texts.
- Developed features to tackle the problem of code-switching in Named Entity Recognition by making it language independent, and unsupervised.
- Confirmed the usefulness of the above features in segregating named entities from other words and the dire need of new algorithms for machine translation of code-mixed text.

Research Intern – Tata Research Development and Design Centre **May - July 2014**
Software R&D Human Centric Systems Lab *(10 weeks)*

- Performed research in the area of Game-based assessment of behavioral characteristics and nudging person's choices through gamification of real-life situation
- Developed a web-based game for the project manager's behavior in the real-life and to extract valuable emotional and behavioral data to predict real life behavior. (Based on Computer Science and Psychology)

Thesis Project

A Customizable Agile Approach to Network Function Placement **August 2016 - current**

- Developed a fast customizable heuristic for service of network function placement using a divide-and-conquer approach.
- Our solution is 186 times better than any previous solution for a 48-pod fat-tree without decrease in performance.
- Developing a dynamic on-line service model using a hybrid Dijkstra's algorithm to do empirical time-driven analysis.
- We plan to implement our solution on a small-scale to show that the algorithm works in real-world.

Other Projects

1. Doppelgänger: a cache for approximate computing **Jan - May 2016**
Parallel Computer Architecture *IIT Madras*

- Implemented Doppelgänger which is a novel approach to reduce the area and energy usage of LLCs by introducing tolerance in the accuracy of the data made available. It reduces the amount of data that needs to be stored by trading off the accuracy of data made available to the user.

2. Virtual Cluster Embeddings for Software-Defined Networks **Aug - Dec 2015**
Software-Defined Networking *IIT Madras*

- Developed a modular toolkit called "VirNet" to facilitate creation of physical topologies and implement virtualization. We developed an Embed Compiler and proposed a segmented architecture which allows you plug-in your own replacement modules and customize the virtualization.

3. Fractal Image Compression **Jan - May 2015**
Memory Based Reasoning in AI *IIT Madras*

- Fractal Image compression is an encoding technique which builds on local self-similarities within images.
- We developed this algorithm and extended it to color images. We then even further researched into how does this algorithm change the membership on GAME compressed datasets upon clustering and studied the tradeoff between storage size and membership error.

4. OpenCV Video Augmented Reality **Feb - Apr 2013**
OpenCV Club Project *IIT Madras*

- This project involved detection of a particular image and 3-dimensional superposition of a video over that image to give a video newspaper-like this phenomenon. This involved learning OpenCV and implementing the video processing libraries in C++ with latest technologies like SURF.

Teaching Experience

Teaching Assistant - Compiler Design Lab **August 2016 - current**

- Assisted professor during lab hours to instruct students on in-lab assignments
- Single-handedly managed a part of the lab from developing the assignment, clearing the doubts and grading it.
- Invigilated and graded exams along with other TAs
- Redesigned the UI/UX of the course webpage.

Scholastic Achievements

- Placed 3rd internationally in ThinkQuest Digital Media Event 2011 conducted by ORACLE Education Foundation
- Selected for the ACM ICPC 2013 Amritapuri Asia Regionals.
- Placed 3rd in the Microsoft Code.Fun.Do. Hackathon 2014
- 2nd Prize for Programming Contest Reverse Coding in EXEBIT 2013 held at IIT Madras.
- 2nd Prize for Math-Modeling in SHAASTRA 2014 held at IIT Madras.

Course Work

Key Courses **August 2012-May 2016**
Core and electives *IIT Madras*

- Software-Defined Networking, Advanced Computer Networks, Performance Evaluation of Computer Systems, Parallel Computer Architecture, Pattern Recognition, Principles of Programming Languages, Modern Compilers-Theory and Practice, Advanced Complexity Theory, Program Analysis, Data Structures and Algorithms, Operating Systems

Skills and Tools

- Languages - C, C++, C#, Java, Pyretic, POX, Python, HTML4/5, CSS2/3, JavaScript, JQuery, Verilog, x86 Assembly, JSP, JavaServlets
- Applications and Tools - Project Floodlight, MiniNet, JavaCC, JTB, LateX documentation, Adobe Photoshop CS5/6, Vim, Emacs, Gedit, Spring Tool Suite
- Technologies - Windows Phone 8 Development, Android Development, Web Development(Front-End), Spartan 6 and Arduino Programming, Software Defined Networking, Virtual Machine Deployment