Abhinav Jauhri

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Education

Carnegie Mellon University, Pittsburgh, PA.
PhD in Computer Engineering, August, 2012 - Present.
Advisor: John Paul Shen

Carnegie Mellon University, Pittsburgh, PA.
MS in Software Engineering, 2011.

Narsee Monjee University, Mumbai, India.
B.Tech. in Computer Engineering, 2010.

Research Interests

Primarily interested in learning algorithms for large-scale intelligent systems.

Papers Submitted And Working Papers

Generating Large Scale Mobility Patterns Using GANs, Abhinav Jauhri, Brad Stocks, John P. Shen.

From Millions of Check-ins To Candidate Pins: Finding the Needle in a Haystack, in collaboration with Facebook Inc..

On the Real-Time Vehicle Placement Problem, Abhinav Jauhri, Carlee Joe-Wong, John P. Shen. In: MLITS, NIPS 2017.

Data Driven Analysis of the Potentials of Dynamic Ride Pooling, Min Hao Chen, Abhinav Jauhri, John P. Shen. In: IWCTS, ACM SIGSPATIAL 2017.

Space-Time Graph Modeling of Ride Requests Based on Real-World Data, Abhinav Jauhri, Brian Foo, Jérôme Berclaz, Chih Hu, Radek Grzeszczuk, Vasu Parameswaran, John P. Shen. In: Workshop on AI and OR for Social Good (AIORSocGood) at AAAI 2017.

Small Polygon Compression, Abhinav Jauhri, Martin Griss, Hakan Erdogmus. In: Data Compression Conference 2016.

Outlier Detection for Large Scale Manufacturing Processes, Abhinav Jauhri, Bradley McDanel, Chris Connor. In: IEEE Big Data 2015.

Small Polygon Compression for Integer Coordinates, Abhinav Jauhri, Martin Griss, Hakan Erdogmus. In: 3rd Conference on Weather Warnings and Communication, 2015.

Comparative Study of Antenna Placement Optimization Algorithms, Abhinav Jauhri, Jason Lohn, Derek S. Linden. In: GECCO 2014.

Professional Employment

Software Engineer, Salesforce.com Inc., San Francisco, CA, (September, 2011 - July, 2012)
- Created APIs for report generation for different entities within the commerce platform.
- Developed and modeled a platform to enable commerce activities across products.

Internships

Facebook, New York, NY. Summer 2017
- Worked on understanding spatial checkin patterns for places.
- Created models to remove noisy checkin data.

Uber Technologies Inc., Maps Research, San Francisco, CA. Spring & Summer 2016
- Modeling ride request pattern.
- Understanding spatial-temporal factors affecting user experience.

Intel, Hillsboro, OR. Summer 2014 & 2015
- Worked on learning techniques for time series prediction and outlier detection.
- Developed an autonomous prediction model for multiple stages of the manufacturing process.
- Analyzed techniques for feature selection.

Nvidia, Santa Clara, CA. Summer 2013.
- Worked on adding functionalities in C++ to provide video streaming for their gaming platform.
- Developed a thread pool library for Windows platform.

Red Hat, Pune, India. Summer 2009.

- Worked on a converged VoIP conference application for GNU/Linux platform. The web based application used Session Initiation Protocol (SIP) for session management.
- Developed a mechanism to allow persistence storage of users logged onto the VoIP application to enable conferencing using Real-time Transport Protocol (RTP).
  `http://code.google.com/p/jvprism`

Teaching

Fall 2016, 2017: Foundations of Computer Systems (18-600) by `John P. Shen`

Spring 2014: Stochastic Optimization (18-879) by `Jason Lohn`

Fall 2014: Evolutionary Algorithms in Engineering Optimization (18-799) by `Jason Lohn`

Graduate Assistantships

Optimization Algorithms for Antenna Placement, Carnegie Mellon University (September, 2010 - August, 2011)
- Developed stochastic algorithms to locate near-optimal antenna placements.
- Contributed in design and implementation of evolutionary algorithms: Genetic Algorithm, Simulated Annealing, Hill Climber.

Formulated course, **How to Write Fast Code (18-645)**, Carnegie Mellon University (May, 2011 - August, 2011)
- Prepared class assignments using CUDA, OMP, and Hadoop.
- Prepared infrastructure for students to collaborate, and test code on clusters.

Technical Reports & Posters

Connections of Evolvability to Correlational SQ Learning, Carnegie Mellon University (January, 2014 - May, 2014)
- Described that under certain restrictions *evolvability* is equivalent to *Probably Approximately Correct*(PAC) model.
- The report elaborates the model of *evolvability*; equivalence of *evolvability* to correlational statistical query model; how an evolution algorithm reach close to desired hypothesis [report].

Comparitive Study of Nearest Neighbour Techniques, Carnegie Mellon University (January, 2014 - May, 2014)
- Performed a comparative study of nearest neighbour algorithms. Specifically, performance and accuracy results of cover trees, and locality sensitive hashing.
- Toy problem of finding approximate image patches for an incomplete image was also experimented with locality sensitive hashing. `https://github.com/ajauhri/knn-exps`

Binomial and Fibonacci heaps in Racket, for submission at Lisp In Summer Projects, 2013
- Functional implementation of heaps using dialect of Lisp.
- Benchmarked and compared with existing libraries in Racket.
  `https://github.com/ajauhri/rkt-heaps`

Coupled Matrix Factorization, Carnegie Mellon University (January, 2013 - May, 2013)
- Formulated the problem of recommendation with additional information as an instance of Coupled Matrix Factorization with two types of regularization
- Performed experiments on two diverse, real world applications and demonstrated effectives of the approach in terms of rating prediction

Measuring Client Device Behavior on the Modern Web, Carnegie Mellon University (January, 2013 - May, 2013)
- Our hypothesis - Most of the client devices have workload which require fetching of state information from a remote server. Understanding the access pattern is essential to perform optimizations.
- Collecting and analyzing patterns of popular websites and web-based applications.
  `https://github.com/ajauhri/web-stap`

Evograph, Carnegie Mellon University (January, 2011 - April, 2011)
- Developed evolutionary algorithms to represent graphs aesthetically.

– Assessed performances of different algorithms on complete graphs. `http://code.google.com/p/evograph`

Process Enactment Tool, Carnegie Mellon University (August, 2010 - December, 2010)

– Developed a tool using Ruby on Rails to effectively track processes in a software organization. Extreme Programming (XP) was adopted in the course of its development. Test Driven Development (TDD) was accomplished using RSpec. Selenium was used for creating integration tests.

– Worked on the design and development of core functionalities, and developed the test suite. `http://github.com/ajauhri/Fall-2010-Public`

Distributed Storage Systems, Narsee Monjee University (July, 2009 - May, 2010)

– Designed and implemented an application to allow storage of data on multiple nodes in a network.

– Worked on the implementation of a virtual file system layer using FUSE-J to intercept system calls, and perform customized operation. Also, developed protocols to enable interaction between storage nodes. `http://distrosys.wikia.com`

Packet Sniffer, Narsee Monjee University (January, 2009 - March, 2009)

– Created a system to capture, store, and analyze network packets. An initial version of a Honey-Pot architecture was developed.

IT Enabled Academia, representing Narsee Monjee University at IBM's Great Mind Challenge 2008

– Built an application to provide a framework for educational institutions to automate their administrative mechanisms with the conventional student-faculty interactions. Some key features included time-table generation, exchange of study material, archival of students data, report generation, and bar-code generator.

– Worked on development of all functionalities, database schema design, and XQueries. `http://github.com/ajauhri/itea`

Graduate Coursework

Stochastic Optimization by `Jason Lohn`

Analytical Performance Modeling & Design of Computer System by `Mor Harchol-Balter`

Machine Learning by `Alex Smola & Barnabas Poczos`

Graduate Algorithms by `Manuel Blum`

Advanced and Distributed Operating Systems by `Hui Zhang`

Machine Learning Theory by `Avrim Blum`

Algorithms in the Real World by `Guy Blelloch & Anupam Gupta`

Network Economics and Resource Allocation by `Carlee Joe-Wong`

Services

Reviewer for International Conference on Availability, Reliability, & Security (ARES), 2017

Reviewer for IEEE Transactions for Evolutionary Computing, 2013

Selected Honors

Carnegie Institute of Technology Dean's Tuition Fellowship for academic year 2012 - 13.

Head of Editorial Board at Narsee Monjee University for academic year 2009 - 10.

Member of a team which was amongst best twenty teams selected by IBM at their annual national competition, Great Mind Challenge, 2008.

Chairperson of the Student Branch of Computer Society of India (CSI) at Narsee Monjee University for academic year 2007 - 08.

College prefect at La Martiniere College, Lucknow, India for academic year 2005 - 06.