Ashwinkumar Ganesan

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Summary

I am a PhD Student at the University Of Maryland, Baltimore County (UMBC). My research areas are focused on Artificial Intelligence, Machine Learning & Data Analytics. My current research looks at ways to interface deep learning architectures (neural networks) with the semantic web and using semantic knowledge to improve the neural networks. I work with Prof. Tim Oates from the Cognition, Robotics, AI & Learning (CORAL) lab @ UMBC.

Education

Ph.D. Computer Science
University of Maryland, Baltimore County (UMBC) (August 2014 - August 2018)
CGPA – 3.75 / 4.0

Masters of Science Computer Science
University of Maryland, Baltimore County (UMBC) (August 2010 - August 2012)
CGPA – 3.71 / 4.0

Bachelor of Engineering
University of Pune (August 2003 - June 2007)
GPA – 3.8 / 4.0

Publications

Workshops
Ashwinkumar Ganesan, Kiante Brantley, Shimei Pan, Jian Chen (2015). LDAExplore: Visualizing Topic Models Generated Using Latent Dirichlet Allocation. Intelligent User Interfaces (IUI) - TextVis Workshop 2015

Journals
Riley, David R, Sieber, Karsten B, Robinson, Kelly M, White, James Robert, **Ganesan, Ashwinkumar**, Nourbakhsh, Syrus & Hotopp, Julie C Dunning (2013). Bacteria-human somatic cell lateral gene transfer is enriched in cancer samples. PLoS computational biology, 9, e1003107.

Masters Thesis
Ganesan, Ashwinkumar (2012). Calculating Representativeness of Geographic Sites Across the World. University of Maryland, Baltimore County (UMBC) - Master's Thesis.

Posters
Ashwinkumar Ganesan. Calculating Representativeness of Geographic Sites Across the World. 35th Graduate Research Conference UMBC (CSEE winner).

Skills

Platforms: Linux, Windows.
Languages & Tools: Python, C, HTML, MongoDB, scikit-learn, gensim, WEKA, Java, Eclipse, Unix Shell Scripting.

Projects

ZEUS (May 2015 – Present)
A lot of recent focus and research has been on deep learning. *Zeus* is framework to analyze and understand the internal working of neural networks and understand how data is represented and stored within it. We study a different neural network architectures with a variety of datasets to provide a way to understand these representations correlate the inner workings of the network with the data outside.

Analyzing DDOS using Social Media (September 2015 – Present)
Twitter has increasing become an important medium of communication for a growing number of people especially to communicate their problems. This project looks at creating NLP methods to detect DDOS attacks on systems by analyzing people's tweets to isolate organization / locations which are affected by a DDOS attack.

Active Learning Enabled Robot Interaction (September 2015 – Present)
Today, robots have the ability to interact with human beings. Our research tries to design algorithms for robots to learn how to interact with human beings using a standard language like english and find a way to associate what is being said with objects in the outside world. One such method we use is *Active Learning* which allows the robot to learn by asking questions to human.

LDAExplore (October 2014 – Present)
LDAExplore is a visualization tool designed to analyze topic models that are generated using Latent Dirichlet Allocation (LDA). The visualization helps analyze topics from a large quantity of documents by providing helping users visualize topic-word and document-topic distributions.

Universal Inter-Process Communication (Sept. 2012 – August 2014)
The universal inter-process communication (UIPC) is a project to create a framework for inter-process communication between apps as well as various other processes running on an Android device. The project is used as a foundation to design a secure layer in android to store app policies and control their behavior. I worked as team coordinator executing the agile development cycle, client interfacing & designing monitoring system for the IPC.

GLOBE (August 2011 - August 2012)
Globe is a global collaboration engine for studying Land Change Science. I was tasked to calculate representativeness of a region in comparison to other regions for the world for a set of defined attributes.The research focused on methods to extract samples from large multidimensional datasets using dimension reduction techniques. I used methods such as Principal Component Analysis combined with clustering techniques. This is project was my Master's Thesis.

Critical System Protection Test Suite (June 2011 – August 2011)
Critical System Protection is a Symantec's product to monitor a system's behavior and provide fine grain access control as well as an Intrusion Detection System. I was tasked with designing a suite of test cases to perform automated functional testing of the product. I achieved complete automation of network tests on different operating systems and flavours including Redhat, Windows, HP-UX and Solaris.

RL Galcon Bot (August 2010 – April 2011)
The project was to implement a game bot for the Google AI Challenge 2010 (Planet wars, a mimic of Galcon) using game trees and reinforcement learning. I further improvised upon the design by considering multi-action adversaries in the game. The Bot was implemented in Python & C.

Building Spanning Trees Using Gossip Protocol (October 2010 – December 2011)
The project analyzes the gossip protocol for constructing a spanning tree for different network structures such as cliques, line and circles (with diameters).

Work History

CORAL Lab UMBC
Research Assistant (August 2014 – Present)

Apkudo LLC
Embedded Software Engineer (September 2012 – August 2014)
Team Coordinator & Engineer with experience in Agile Methodology.
Knowledge of Android operating system including the kernel.

Symantec Corporation
Software Development Intern (June 2011 – August 2011)

Niyuj Enterprise Software Solutions
Senior Member of Technical Staff (November 2009 – August 2010)
Test Engineer & Team Coordinator for Symantec's CSP product.

Tata Consultancy Services
Assistant Systems Engineer (Sept. 2007 – Oct. 2009)
Performance Testing Engineer for applications working with HP LoadRunner & Performance Center.

Academic Positions

CSEE ACM Chapter
President (August 2015 - present)

UMBC Graduate Students Association (GSA)
Senator (August 2014 - present)

Dept. Promotions & Tenure Committee
Student Representative (August 2015 - present)
Analyze student feedback information & vote to decide faculty tenures.

Mid Altantic Student Colloquium
Program Committee Member (January 2015)

UMBC Dept. Of Computer Science & Electrical Engg.
Teaching Assistant (August 2011 - May 2012)
Courses - Introduction to Artificial Intelligence, Introduction to Artificial Neural Networks, Introduction to Database Management Systems.

Academic Activities

- Started the undergraduate college security group and taught sessions on security programming and various attacks.
- Part of the college Linux-Users group and taught students Linux installation & programming.
- Teaching Assistant (TA) for Operating Systems, Principles of Compiler Design and C Programming courses at my undergraduate college.
- Won the "Best Systems Project" Consolation Prize in B.E Project competition "Intechxication 2007" held at MIT, Pune.
- Part of organizing committee for the international competition ROBOCON (ABU) in the year 2005 and 2007.
- Part of the technical group taking part in ROBOCON 2006 and worked on programming for controllers.