JEES AUGUSTINE

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OBJECTIVE

To obtain a summer intern position in a research and development organization where my skills of research and engineering could be used diligently and creatively to carve a niche for personal and professional growth as a computer enthusiast in the fields of Algorithms, Machine Learning, Data Analysis, Data Management, Crowdsourcing and Cloud Computing in a dynamic and challenging environment.

RESEARCH INTERST

Burgeoning demand for a better interpretation of data has become the single most challenge in business intelligence. Coming up with a sustainable data management system for faster query resolution pose yet another research challenge. Through my research in data management I would like to address the issues in data analysis in two-fold. There exist problems which require human intervention as a part of solution pipeline. I am exploring a cost and time effective data management issue of top-k nearest graph construction for any given multimedia database including images, video and audio. My research also investigates the application of Machine Learning and Neural Network techniques in training models that estimate human mobility function for accurate location prediction.

EDUCATION

- **PhD Program, University of Texas at Arlington, USA**
  Computer Science and Engineering.   **[2014 - Fall 2018 (Expected)]**
  (CGPA – 4.0 / 4.0)
- **Master in Engineering, Birla Institute of Technology & Science, Pilani, India**
  Computer Science.   **[2011 - 2013]**
  (CGPA – 8.19 /10.0)

PROFESSIONAL EXPERIENCE

- Software Engineer II – **Cisco Systems – India**, Bangalore, India.   (08/2013 – 08/2014)
  Implementation and refinement of features in Multi-Protocol Label Switching (MPLS) and Fast Rerouting (FRR) on mobile backhaul networks.

- Project Intern – **iCOE**, **EMC Corporation**, Bangalore, India.   (01/2013 – 06/2013)
  Design and development of an application, choreographing the Backup Server Install/Upgrades. Devising a pseudorandom number generator for verifying the client side deduplication.

- Project Intern – Theoretical Computer Science Lab, **IIT Chennai**, Madras, India.   (05/2012 – 07/2012)
  Online Minimum Makespan Scheduling with improved Buffer Size.

- Project Intern – **Vikram Sarabhai Space Center**, Trivandrum, Kerala.   (11/2009 – 12/2009)
  Design of information repository system for launch vehicle simulation.

PUBLICATIONS/SUBMISSIONS

- Leveraging Similarity Joins for Signal Reconstruction [Submitted to VLDB 2018]
- Computing Top-K Nearest Neighbor Graph through Crowdsourcing [Submitted to SIGMOD 2018]
- [Poster] Finding the Closest Point to a Prior in Large-Scale Sparse Binary Under-Determined Systems, *iPerform* 2017
- [Poster] Finding Top-k Source-Destination Flows in a Network, *iPerform* 2016

WORKING PROJECTS

- AEL: Deep Learning Models to Predict User's Spatial Locations Using GPS Data

TEACHING EXPERIENCE

- **STEM Scholarship** for Graduate Teaching Assistant at long semesters at UTA.
- Graduate Teaching Assistant, **Computer Networks**, University of Texas at Arlington, Texas.   (06/2015 – 12/2017)

- Graduate Teaching Assistant, **Computer Networks I: Protocols and Architecture**, University of Texas at Arlington, Texas.   (09/2014 – 05/2015)
- Teaching Assistant, **Data Structure and Algorithms**, Birla Institute of Technology and Science, India.

  (08/2012 – 12/2012)
- Teaching Assistant, **Computer Networks**, Birla Institute of Technology and Science, India.   (08/2011 – 05/2012)

SKILLS

High-level & Scripting languages	**:** C, Java, HTML, XML, JSP, Python
Tools	: Eclipse, LaTex, Visual Studio 2005, Microsoft Excel
Query Languages	**:** SQL, PLSQL
Platforms & Documentation	**:** Windows XP, Windows Vista, Windows 7, Linux, OS X, MS Office 2003 & 2007, .Net
Databases	**:** MS Access, MS SQL Server, MySQL, Oracle

PROJECTS

1. **Face Recognition using Support Vector Machines (SVM)**
   (UTA, Sep 2014 – Dec 2014)
   We have used Python2.7 in constructing a face recognition system using the support vector machines to classify objects within a given database. We have used the AT&T image dataset consisting of 40 different individuals. We have used Principal Component Analysis to figure out the most reliable attributes in recognizing human faces. We have got an accuracy of close to 88% in recognition.

2. **Image Recognition using Linear Discriminant Analysis (LDA)**
   (UTA, Sep 2014 – Dec 2014)
   We have used Python2.7 in constructing a image recognition system using the linear discriminant analysis to classify objects within a given database. We have used the AT&T image dataset consisting of 40 different individuals. We have used Principal Component Analysis for the dimensionality and have obtained the principle features of a face. We have got an accuracy of close to 94% in recognition.

3. **Choreography of Backup Server Install/Upgrade**
   (iCOE, EMC-Corporation, Bangalore: Jan 2013 – Jun 2013)
   The work was focused in designing and implementing the algorithm for Upgrade of Backup Server by scheduling the processes that have to fall in line with the predetermined flow chart and report any anachronism in Python using MySQL database. The solution performs a full length, automated data backup and restore functionality tests to ensure the sanity of the Server once the server springs back to action from an Install/Upgrade along with a full server health check. My works included the design and implementation of solutions to problems faced during the Install/Upgrade and to complete a post install server health check and validation accompanied by performance estimation.

4. **Live Migration of Virtual Machine over a Network**
   (Birla Institute of Technology and Science: Aug 2012 – Dec 2012)
   The aim was to formulate an algorithm, which can speed up the live migration of the virtual machine from one physical machine to another over a network by reducing the downtime. Downtime is an essential management primitive in today's datacenters since it minimizes the service disruption time in resource constrained contexts. We have alleviated the problem by a negotiation for a premature starting of destination machine and pulling the working sets. Memory contents are broken and prioritized to be sent over to the destination machine and beyond a threshold we force the machine to full active mode followed by a *push* phase for transfer completion and eventual shutdown.

5. **Improved TCP for Video Streaming**
   (Birla Institute of Technology and Science: Jan 2012 – May 2012)
   We have proposed techniques to solve the two problems such as degradation in the quality and increase in the delay due to global synchronization problems. Using the proposed technique, we by allowed slower window reduction on collision detection for Real Time applications like Video conferencing, which demands seamless bandwidth share. The novel congestion control algorithm developed offers a new suite of window reduction pattern for connections and prioritizes the video packets to improve the QoS.

6. **Middleware framework on the cloud to enable Dynamic Composition of modules Semantically**
   (Birla Institute of Technology and Science: Jan 2012 - Present)
   This project aims at building a middleware framework by which users of the cloud service will be able to obtain suitable service from the cloud infrastructure leveraging between different economic, network and computational aspects to get the service request processed. The middleware will semantically compose on the fly to make a single module from cloud by wrapping different individual service modules.

7. **Distributed System Simulator**
(Birla Institute of Technology and Science: Sep 2011 – Dec 2011)
The simulator models distributed system by synchronizing processes in a distributed fashion and could generate global snapshots of processes and resources. My work involved tailoring and routing a secure and network efficient Probe for Distributed Deadlock detection over the network with minimum network overhead, attending to network latency. Deploying features of JAVA, probe suspends and releases thread resources to resolve the deadlock. The Simulator fits in as a full-fledged middleware over which a Cluster, Cloud or a Grid could be established.

8. **Design of Information Repository System for Launch Vehicle Simulation**
(Vikram Sarabhai Space Center, VSSC: Dec 2010 - Jan 2011)
We explored the possibility of combining the isolated data repositories of flight details at **VSSC** to obtain a central data warehouse to ensure data availability. We have unified the database of all launch vehicles and fully automated the process of procuring data to database. We have deployed semantic search for flight related information and visual rendering of results on an apache server. My work was to build data warehouse to give performance optimized information retrieval for common queries with help of an auxiliary database above new queries. The project is based on technology JSP and MySQL as database.

RELVANT COURSES

- Advanced Computational Models and Algorithms
- Special Topics in Advanced Information Security
- Machine Learning
- Advanced Algorithms and Complexity
- Advanced Computer Networks
- Advanced Operating Systems
- Data Structures and Programming Methodologies
- Algorithm Analysis and Design
- Security in Computing
- Data Analysis and Modeling

CERTFIED COURSES ONLINE

- **[Coursera] Introduction to Data Science in Python Introduction to Data Science in Python**
- **[Coursera] Programming for Everybody (Getting Started with Python)**
- **[Coursera] Python Data Structures**
- **[Coursera] Using Python to Access the Web Data**
- **[Coursera] Using Databases with Python**

ONGOING COURSES ONLINE

- **[Coursera] Deeplearning.Ai**
- **[Coursera] Machine Learning**
- **[Coursera] Neural Networks for Machine Learning**
- **[Udacity] Deep Learning from Google**
- **[edx] Machine Learning for Data Science**

ACADEMIC ACHIEVEMENTS

1. 1 among the 18 qualified for BITSAT- Higher Degree Program (Computer Science), an All India entrance examination for admission into Master Degree by Birla Institute of Technology and Science, Pilani (BITS-Pilani), India.

2. Secured 98.88 Percentile in Graduate Aptitude Test in Engineering (GATE) in 2011 (Written by .13M Students).

3. Project Forum Member (Masters) Computer Science Association BITS – Pilani.

4. Secured 1st position for presenting the paper "Self Defending Networks-A Smarter Way to Defend" at XTRIUM 09 v.20, Technical Festival by Association of Electronics and Communication Engineering, MACE, Kothamangalam.

5. Secured 2nd position for presenting the paper "Self Defending Networks with Automatic Intrusion Detection" at Qbit'09 v.20, Technical Festival organized by Department of Computer Science and Engineering, MACE, Kothamangalam.