

## Mohammad Zubair Ahmad

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### Objective:

I look forward to working on challenging technologies with practical applications and opportunities to think and innovate. Utilizing my theoretical and programming knowledge in various domains to learn more is always a primary aim.

### Education:

- *PhD Student* in Computer Engineering, School of EECS, University of Central Florida, Fall 2007 – Present. (Passed PhD Qualifiers Spring 2007)
- *Master of Science* in Computer Engineering, School of EECS, University of Central Florida, Fall 2005 – 2007.
- *Bachelor of Engineering*, Dept. of Information Science, Visvesvariah Technological University ([www.vtu.ac.in](http://www.vtu.ac.in)) at Golden Valley Institute of Technology, KGF, Karnataka. July 2001 - June 2005.

### Experience:

*Research Assistant*, **Institute for Simulation and Training (IST)**, University of Central Florida (Mar 07 - Present).

At IST I have been working on a couple of projects involving programming and simulating networking protocols in distributed computing. Using UCF's high performance computer (called Stokes) we carried out simulation studies of the IEEE 802.11 MAC protocol in MATLAB. Currently we are working on building a HLA based model of the WARSIM architecture in OPNET for the US Army.

*Graduate Teaching Assistant*, Dept. of **Computer Engg**, UCF (Fall 2005 - Present).

I have been teaching undergraduate labs successively over fall and spring semesters. Some of the labs/courses I have taught are Computer Systems Design - I, Introduction to Comp. Engg, Data Structures and Digital Circuits.

*Research Assistant*, Supercomputer Education & Research Center, **Indian Institute of Science**, India (Aug 03-July 05).

I worked in the areas of mobile systems (ad hoc networks) and networking infrastructure/ support (congestion control, medium access, energy efficiency etc) for two years during my undergraduate times. My internship here resulted in three publications.

### Courses:

Advanced Computer Networks, High Performance Computing, Advanced Computer Security and Forensics, Expert Systems and Knowledge Engineering, Software Engineering, Multi Agent Systems, Random Processes, Algorithms, Computer Network Architecture, Network Optimization.

**Skills:** *Platforms:* Windows xx, Linux xx, Ultrix, MS-DOS, TinyOs 1.x/2.0

*Languages:* C, C++, 80x86 asm, Tcl/Tk, JAVA, CGI-PERL, Distributed Computing with MATLAB.

*Tools:* ns-2 (network simulator), nam (Network Animator), TOSSIM, LaTeX/BibTeX, xgraph, gnuplot, VB, Oracle, shell programming, awk, CLIPS.

### Refereed Publications:

- [1] M.Z. Ahmad, M.I. Akbas, D. Turgut, B. Goldiez, R. Palaniappan and T. Dere. Live, Virtual, Constructive Simulation Modeling using high performance computing. Spring Simulation Interoperability Workshop (SIW), San Diego, CA, March 2009.
- [2] R. Palaniappan, M.Z. Ahmad and T. Clarke. High Performance Parallel Processing Algorithms for Mobile Communications. 3rd European Conference on Antennas and Propagation, Berlin, Germany, March 2009.
- [3] M.Z. Ahmad and D. Turgut. Congestion Avoidance and Fairness in Wireless Sensor Networks. Proceedings of IEEE GLOBECOMM'08, New Orleans, November 2008.
- [4] S. Sengupta, M.Z. Ahmad and M. Chatterjee, "Initializing Mesh Architecture for Cognitive Radio based IEEE 802.22", Accepted as Work-In-Progress paper at the 2<sup>nd</sup> International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM) 2007, Orlando, FL. August 2007.
- [5] M.Z. Ahmad, D. Turgut and R. Bhakthavathsalam, "Circularity-based Medium Access Control in Mobile Ad Hoc Networks", Proceedings of 5th International Conference on Ad Hoc Networks and Wireless (AdHocNow-2006), Ottawa, Canada, August 2006.
- [6] M.Z. Ahmad, "Eel Controls for Congestion Control for Real Time Streams over the Internet", 18<sup>th</sup> Computer Society of India – Karnataka Chapter Student Convention, Bangalore, India, Nov 2004.

- [7] M.Z. Ahmad and M. Venkataraman, "A Non-AIMD based Congestion Control Algorithm for Real Time Streams", IEEE 12<sup>th</sup> Annual Symposium on Mobile Computation and Applications, Bangalore, India, Nov 2003. \* **Student Paper Award**

### Book Chapters:

- [1] A. Boukerche, M. Z. Ahmad, B. Turgut and D. Turgut, "A Taxonomy of Ad hoc routing protocols". In A. Boukerche, editors, *Algorithms and Protocols for Wireless, Mobile Ad hoc Networks*, pp. 129–164, Wiley, 2008.
- [2] A. Boukerche, M. Z. Ahmad, B. Turgut and D. Turgut, "A Taxonomy of Sensor routing protocols In A. Boukerche, editors, *Algorithms and Protocols for Wireless Sensor Networks*, pp. 129–160, Wiley, 2008..

### Projects Undertaken:

- Live, Virtual, Constructive Simulation modeling using high performance computing. Proposes and implements the creation of a test-bed of models of various federations in OPNET.
- Parallel 802.11a PHY architecture using MATLAB distributed computing. Parallelizes the 802.11a protocol implemented in MATLAB and Simulink to obtain speedup in simulations when executed in multiple cores on the high performance computing cluster. Uses the Distributing Computing Toolbox of MATLAB.
- SenSim: A sensor network simulator in Java – team of 2. An event based wireless sensor network simulator.
- PingPong App: A PingPong simulation using motes in TinyOS – team of 2.
- Securing Dynamic Spectrum Use – Team of 3. A generic simulator was devised in Java to efficiently allocate and secure the available spectrum to multiple users and ensure fairness and authentication among other characteristics.
- Network Intrusion Detector – Team of 3. A software was written in Java to enable effective network intrusion detections. Training and Testing Datasets were from the well known KDD Cup competition.
- Channel Allocation using Multi-Agent System – Team of 3. A generic simulator was devised in C++ which would allocate multiple channels to nodes in a network using particular graph coloring algorithms.
- Spectrum Analyzer over the Web – Team of 4. Designed a software which shows available spectrum based on chosen location and time. The UCF area was considered and spectrum availability modeled. The software was designed using Java with an interactive GUI and SQL as the backend database table.
- M.Z. Ahmad and S. Maji, "Enhanced 802.11 MAC Protocol in MANETs For Pervasive Computing Environments", Senior Thesis. **Chosen as best project in the department.** Performed at the **Indian Institute of Science**
- M.Z. Ahmad and D. Kumar, "Perspectives towards TCP Congestion Control for Real Time Streams", Junior Thesis. **Chosen as best project in the department.** Performed at the **Indian Institute of Science.**

### Honors and Awards:

- ECE Department **Fellow, University of Central Florida**, Fall 2005, Fall 2006.
- **Teaching Assistant** at Computer Engg Dept, UCF, Fall 2005-Spring 2009.
- **Department Topper** (securing 91%) in **Final** semester (Senior Year) out of 60 students.
- Department **highest scores** both in Junior Year and Senior Year Projects (Secured 98% in external evaluation).
- **Chair of IEEE Student Chapter** at Golden Valley Institute of Technology, K.G.F, Jan 2003-Jan 2005. Student Member of IEEE since Jan- 01.
- **Chair** of Special Interest Group in Networks And Mobile Systems (**SIGNAMS**) at GVIT, Jan 2003 – Jan 2005. I was involved with active lecturing and research initiations.
- Secured the **First** position in the Computer/Science Quiz as a part of the **Intel Science Talent Discovery Fair, New Delhi–Feb 2000**. The quiz was conducted at the national level with over 25 teams from all over the country.
- Represented the Eastern Zone at the **Intel Science Talent Discovery Fair, New Delhi-Feb 2000**. Presented the software project entitled "Dynamics of Projectile Motion" in the Computer Science Category. This competition was jointly organized by **Intel** and **The National Council of Science Museums, New Delhi**.
- Secured the **First** position in the Eastern Zone (comprising of more than 200 participants from all of the Eastern States of the country) at the **Intel Science Talent Discovery Fair, Kolkata-Jan 2000**. My software project entitled "Projectiles", was chosen to represent the Eastern Zone at the National Level Fair that year. This software is currently used as a teaching aid for high school science students in various schools in Kolkata.
- **First**, in the **West Bengal State Level Computer Software Development Competition, Kolkata-Nov 1999**, organized by Birla Industrial and Technological Museum, Kolkata, for the software developed on "Projectiles". The competition comprised of District Level winners from all over the state of West Bengal.
- **First**, in the **Calcutta District Level Computer Software Development Competition, Kolkata-Nov 1999**, organized by Birla Industrial and Technological Museum, Kolkata, for the software developed on "Projectiles".
- Participated in a mathematics and software competition cum workshop at the **Indian Institute of Technology (IIT) – Kharagpur**, on the occasion of *World Mathematics Year*, 2000.
- Member of the **Board of Directors**, Executive Board of the **Computer Club** of La Martiniere For Boys, Kolkata, Oct-1999-Oct 2000.
- **Special Award** for Excellence in Computer Science, **La Martiniere For Boys**, 1998, 2000.