

Tanima Dey

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Objective

To get an internship in Summer/Fall 2012 and acquire industry and research experience

Research Interests

Compilers, Run-time Systems, Virtual Execution Environment, Performance Analysis, Resource Contention, Computer Architecture
Advisor(s): Dr. Jack W. Davidson, and Dr. Mary L. Soffa, University of Virginia

Education

- *Graduate Student*, PhD program, Computer Science, University of Virginia, Charlottesville, United States
GPA: 3.94/4.00 (to date)
- *Master of Computer Science (MCS)*, University of Virginia, Charlottesville, United States
GPA: 3.94/4.00, Graduation: August 2011
- *Bachelor of Science (BS)*, Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
CGPA: 3.91/4.00, Major CGPA: 3.91/4.00, Merit position: 6th among 121 students, Graduation: June 2007

Graduate Research Experience (January 2009 – present)

- **REAct Framework:** Research in designing and implementing a user-level virtual execution environment to provide a framework for easy integration and development of custom resource management policies for multi-threaded applications running on state-of-the-art multi-core processors. The general infrastructure provides several services for allocating hardware resources, adjusting application execution, and collecting run-time information. The framework supports quick development and testing of different user-specific, application-specific and hardware-specific policies by aggressive and fine-grained on-line monitoring, dynamic adaptation and multi-application/thread coordination with very low (< 3%) run-time overhead.
- **Performance Analysis of Shared Resources:** Research on designing methodologies to characterize multi-threaded applications based on contention for the shared resources in the memory hierarchy (for example, L1-cache, L2-cache, Front Side Bus). The methodology generalizes application's characterization for a particular shared resource, both when the application runs alone and runs with another multi-threaded application.
- **Performance Analysis of Hardware Prefetchers:** Research on determining the effect of hardware prefetchers on an application's performance as the application contends for shared memory resources, both when running alone and with another multi-threaded application.

Undergraduate Research Experience (June 2006 – May 2007)

- **Electronic Election:** Research and development in fully automated electronic election system based on the *Fujioka-Okamoto-Ohta* protocol. The system meets the stringent security requirement of online voting including privacy, anonymity, eligibility and verifiability.

Publications

- Wei Wang, [Tanima Dey](#), Jason Mars, Lingjia Tang, Jack Davidson, Mary Lou Soffa, **Performance Analysis of Thread Mappings with a Holistic View of the Hardware Resources**, To Appear: IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), New Brunswick, New Jersey, April 2012.
- Wei Wang, [Tanima Dey](#), Ryan W. Moore, Mahmut Aktasoglu, Bruce R. Childers, Jack Davidson, Mary Jane Irwin, Mahmut Kandemir, Mary Lou Soffa, **REAct: A Customizable Virtual Execution Manager for Multicore Platforms**, International Conference on Virtual Execution Environments (VEE), London, United Kingdom, March 2012.

- Tanima Dey, Wei Wang, Jack Davidson, Mary Lou Soffa, **Characterizing Multi-threaded Applications based on Shared-Resource Contention**, *IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)*, Austin, Texas, April 2011.
- Tanima Dey, Wei Wang, Jack Davidson, Mary Lou Soffa, **Poster: A Study of the Effect of Prefetching in Share-Resource Contention**, *International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Newport Beach, California, March 2011.
- Naznin Fauzia, Tanima Dey, Inaba Bhuiyan, Md. Saidur Rahman, **An Efficient Implementation of Electronic Election System**, *International Conference on Computer and Information Technology (ICCIT)*, Dhaka, Bangladesh, December 2007.

Projects

- Design and development of an automated system that sends notification about any event taking place in different web service offered information. The event can be a new e-mail from a particular e-mail address or status update of a friend in Twitter. Also a general event description language for specifying the web events is designed and implemented in the prototype system using Java (2009)
- Design and development of a parallel loop detector in C programs. The system is able to detect whether multiple loops can be run in parallel by inspecting the memory locations being accessed, using software dynamic translator and dynamic code instrumentation. The loop detector takes the binary of the program and provides the line number of the particular loops those can be parallelized as output (2009)

More details of the projects can be found at: <http://www.cs.virginia.edu/~td8h/projects.html>

Achievements and Honors

- *Travel Grant*, Workshop on Multicore Systems – Architectures, Runtime Systems and Software Development (2011)
- *Travel Grant*, ASPLOS (2011), ISPASS (2011)
- *Google Women of Color Scholarship*, Grace Hopper Celebration (2009)
- *Travel Grant*, CRA-W Grad Cohort Workshop (2009, 2011)
- *University Merit Scholarship*, Seven times for being a top-10 student in BUET (2002-2007)
- *Dean's List Scholarship*, Four times for having GPA above 3.75 in any academic year in BUET (2002-2007)

Teaching Experience

- Teaching Assistant, Department of Computer Science, University of Virginia (August – December 2008)
- Teaching experience of one year in Computer Architecture, Digital Logic Design, and Programming Languages in a class of average 50 students in the Department of Computer Science and Engineering at United International University, Dhaka, Bangladesh (June 2007 – June 2008)

Technical Skill

- *Operating Systems*: Windows 9x/NT/2K/XP/Vista, Linux
- *Programming Languages*: C, C++, Java, C#, Prolog, Shell Script, x86 Assembly Language
- *Parallel Programming*: MPI, OpenMP
- *Research Tools*: Perfmon, Simics, Strata, DRAMSim, M5
- *Programming Tools*: MATLAB, Microsoft Visual Studio .NET, KawaPro, JBuilder
- *Compilers*: GNU Compiler, Microsoft C and C++ compilers
- *Database server*: Oracle, MySQL
- *Software Design and Modeling*: UML
- *Web development*: JSP, HTML, ASP.NET
- *Miscellaneous*: Verilog, OpenGL, Minitab

Memberships

- IEEE Graduate Student Member (Since 2011)
- Golden Key Honor Society Member (Since 2009)
- Volunteer for International Students Inc. (ISI), Charlottesville, Virginia (Since 2009)