Rifat Shahriyar
Resume

Contact

Assistant Professor
Department of Computer Science and Engineering
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Research Interests

Memory Management, Virtual Machine, Programming Language

Education

- Ph.D. in Computer Science, April 2015
  Australian National University (ANU), Canberra, Australia
  Supervisors:
  Stephen M. Blackburn, Australian National University (http://users.cecs.anu.edu.au/~steveb)
  Kathryn S. McKinley, Microsoft Research (http://research.microsoft.com/en-us/people/mckinley)
  Projects
  Fast Conservative Garbage Collection – This project focuses on implementing a conservative garbage collector for managed languages based on RC Immix. The existing conservative garbage collectors like Boehm-Demers-Weiser (BDW) and Mostly Copying (MCC) suffer significant performance overhead compared to exact generational tracing collectors. Our conservative RC Immix collector uses a low overhead object map to validate ambiguous references and pin their referents with Immix line granularity. It matches the performance of the production garbage collector (Generational Immix) of Jikes RVM.
  RC Immix Garbage Collection – This project focuses on implementing our improved reference counting in Immix heap organization. Reference counting generally use free list for allocation. Immix is a mark-region based garbage collector that uses bump pointer for allocation, tracing for identification and sweep-to-region for reclamation. The proposed RC Immix collector will use bump pointer for allocation, reference counting for identification and sweep-to-region for reclamation. It performs defragmentation both proactively and reactively. It outperforms the production garbage collector (Generational Immix) of Jikes RVM.
  High Performance Reference Counting – Reference counting is almost completely ignored in implementations of high performance systems today. We find that an existing modern implementation of reference counting has average 30% overhead compared to tracing. In this project we provided several optimizations that completely eliminate that overhead. This brings the performance of reference counting on par with that of a well-tuned mark-sweep collector.
- M.Sc. in Computer Science & Engineering, December 2009
  Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh
  GPA: 4.00 in a scale of 4.00
  Supervisor: Md. Mostofa Akbar, Professor, Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology
- B.Sc. in Computer Science & Engineering, May 2007
  Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh
  GPA: 3.93 in a scale of 4.00 (Ranked 4th among 121 students)

Conference Publications

- R. Shahriyar, S. M. Blackburn, and K. S. McKinley, "Fast Conservative Garbage Collection," in *OOPSLA '14: Proceeding of the 24th ACM SIGPLAN conference on Object-Oriented Programming, Systems, Languages & Applications,* 2014.
- R. Shahriyar, S. M. Blackburn, X. Yang and K. S. McKinley, "Taking Off the Gloves with Reference Counting Immix," in *OOPSLA '13: Proceeding of the 24th ACM SIGPLAN conference on Object-Oriented Programming, Systems, Languages & Applications,* 2013.

- R. Shahriyar, S. M. Blackburn, and D. Frampton, "Down for the Count? Getting Reference Counting Back in the Ring," in *Proceedings of the Eleventh ACM SIGPLAN International Symposium on Memory Management*, ISMM '12, Beijing, China, June 15-16, 2012.
- R. Shahriyar, M. M. Akbar, M. S. Rahman, M. F. Bari, and S. Shahriyar, "CORS - A Cost Optimized Resource Reservation Scheme for Grid, " in *Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications*, PDPTA '11, Las Vegas, Nevada, USA, July 18-21, 2011.
- R. Shahriyar, M. F. Bari, G. Kundu, S. I. Ahamed, and M. M. Akbar, "Intelligent Mobile Health Monitoring System (IMHMS)," in *Proceedings of Second International ICST Conference on Electronic Healthcare for the 21st century*, eHealth 2009, Istanbul, Turkey, September 23-15, 2009.
- M. F. Bari, M. S. Rahman, and R. Shahriyar, "Finding all covers of an indeterminate string in O(n) time on average," in *Proceedings of the Prague Stringology Conference*, PSC 2009, Prague, Czech Republic, August 31 - September 2, 2009.
- R. Shahriyar, E. Hoque, I. Naim, S. M. Sohan and M. M. Akbar, "Controlling Remote Systems using Mobile Telephony," in *Proceedings of the 1st International Conference on MOBILe Wireless MiddleWARE, Operating Systems, and Applications*, Mobilware 2008, Innsbruck, Austria, February 13 - 15, 2008.

Journal Publications

- R. Shahriyar, M. F. Bari, G. Kundu, S. I. Ahamed, and M. M. Akbar, "Intelligent Mobile Health Monitoring System (IMHMS)," *International Journal of Control and Automation (IJCA)*, vol. 2, iss. 3, 2009.
- S. Sultana, R. Karim, R. Shahriyar, M. M. Akbar, and S. I. Ahamed, "Ubiquitous Secretary: A Ubiquitous Computing Application based on Web Services Architecture," *International Journal of Multimedia and Ubiquitous Engineering (IJMUE)*, vol. 4, iss. 4, 2009.
- R. Shahriyar, E. Hoque, I. Naim, S. M. Sohan, M. M. Akbar, and M. Khan, "Controlling Remote Systems using Mobile Telephony," *International Journal of Smart Home (IJSH)*, vol. 2, iss. 3, 2008.

Employment

- Worked as a Research Assistant Intern in Oracle Labs, USA from July 2013 to September 2013. My responsibility was to develop a garbage collector for one of Oracle's proprietary VM.
- Worked as a Technical Consultant in Spectrum Engineering Consortium Ltd, Bangladesh from January 2007 to May 2007. My responsibility was to develop and manage an embedded system project and some mobile-based applications.
- Currently working as a faculty member in the Department of Computer Science & Engineering of Bangladesh University of Engineering & Technology, Bangladesh from June 2007.

Academic Honors

- University Merit scholarship for excellent results in each of the eight semesters.
- Dean's List Award in each of the four academic years for outstanding academic results.
- Dhaka Education Board Scholarship for excellent results in the Higher Secondary Certificate (HSC) Examination and Secondary School Certificate (SSC) Examination.

Technical Skills

- *Programming Languages*: Java, C/C++, C#, PHP, Python, JavaScript, Verilog HDL
- *DBMS*: MySQL, SQL Server, MS Access, Oracle
- *Frameworks*: Jakarta Struts, .NET framework,
- *Others*: Ajax, Hibernate, JUnit, NHibernate, NUnit, Log4Net, LINQ, Android, LaTeX