395 Dreese Laboratories
2015 Neil Avenue
Columbus, Ohio
(+1) 614-477-9964
sengupta@cse.ohio-state.edu
PhD student at Ohio State University

Aritra Sengupta

Curriculum Vitae

Research Interest

Programming Languages, Runtime Systems, Program Analysis, Compilers, Code Optimization, Concurrency Bugs, Memory Models.

Education

9/2011–current **PhD. in Programming Languages**, *Computer Science and Engineering Department, Ohio State University*, Columbus, Ohio.
GPA: 3.97/4 (`http://www.cse.ohio-state.edu`)

6/2004–6/2008 **B.Tech in Computer Science and Engineering**, *School of Computer Science and Engineering, Vellore Institute of Technology University*, Vellore, India.
GPA: 9.29/10 (`http://www.vit.ac.in`)

Publications

Aritra Sengupta, Man Cao, Michael D. Bond and Milind Kulkarni. Toward Efficient Strong Memory Model Support for the Java Platform via Hybrid Synchronization. In *ACM International Conference on Principles and Practices of Programming on the Java Platform: virtual machines, languages, and tools (PPPJ'15)*, September 2015. To appear.

Aritra Sengupta, Swarnendu Biswas, Minjia Zhang, Michael D. Bond and Milind Kulkarni. EnfoRSer: Hybrid Static–Dynamic Analysis for Region Serializability. In *ACM Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, March 2015.

Swarnendu Biswas, Jipeng Huang, Aritra Sengupta, and Michael D. Bond. DoubleChecker: Effcient Sound and Precise Atomicity Checking. In *ACM Conference on Programming Language Design and Implementation (PLDI)*, June 2014.

Michael D. Bond, Milind Kulkarni, Man Cao, Minjia Zhang, Meisam Fathi Salmi, Swarnendu Biswas, Aritra Sengupta, and Jipeng Huang. Octet: Capturing and Controlling Cross-Thread Dependences Efficiently. In *ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, October 2013.

Related Work Experience

9/2011–Present **Research Assistant**, *Computer Science and Engineering Department, Ohio State University*, Columbus, Ohio.
Research at the *PLaSS* group involves development of analyses inside the JVM to solve concurrency issues in multi-threaded programs. In particular, my past research projects use a combination of static and dynamic analysis to enforce region serializability (RS) in software. This is the first technique to provide RS on commodity systems at a reasonable overhead. In another published work we used a combination of per-object locks and static locks in statically bounded regions to serialize the regions and enforce a strong memory model. Currently I am working on devising techniques to implement a memory model, stronger than the state of the art applicable for programs using locks, transactional memory or both executed by a single runtime.

5/2015–8/2015 **Summer Research Intern**, *Huawei US R and D*, Santa Clara, CA, USA.
Evaluating different runtimes via benchmarking; comparing performance, scalability and design of concurrency primitives.

1/2011–7/2011 **Systems Engineer**, *Tata Consultancy Services (TCS)*, Kolkata, India.
Developments in Core Java and Java Struts

8/2008–12/2010 **Systems Engineer**, *Tata Consultancy Services (TCS)*, Kolkata, India.
Migration of Algol code in legacy systems to C/C++, Interfacing C libraries with COBOL.

Honors and Awards

2011-2012 Awarded "University Fellowship", graduate student fellowsip, Ohio State University.

4/2010 Secured "Star of the Month" award via *TCS Gems* as recognition of contribution to strategy, design, and implementation of a language migration project, undertaken by Tata Consultancy Services, India.

11/2008 Secured "Initial Learning Program Top Performer" award via *TCS Gems* in the first phase of training at Tata Consultancy Services, India.

2006-2008 Awarded merit certificate and scholarship in three consecutive years 2006, 2007, 2008 for academic performance at Vellore Institute of Technology University, Vellore, India.

2004 Awarded merit certificate for academic performance in Physics, Chemistry and Mathematics in Indian School Certificate Examination.

Computer skills

- Familiar with Jikes RVM.
- Familiar with the components of managed languages: JIT compiler, optimizing compiler.
- Data-flow and control-flow analysis on intermediate represenation, dynamic analysis in JVM.
- Have worked in ROSE compiler framework, Soot: a Java optimization framework.
- Performance engineering of parallel programs, compiler optimizations.
- Developing dynamic analysis to enforce properties in shared-memory multithreaded programs.
- Have worked with OpenMP and MPI parallel programming models.