

## Alexander G. Bakst

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| CONTACT INFORMATION        | Computer Science and Engineering<br>University of California, San Diego<br>9500 Gilman Drive, Mail Code 0404<br>La Jolla, CA 92093-0404   | (858) 354-4091<br>abakst@cs.ucsd.edu<br><a href="http://cse.ucsd.edu/~abakst">http://cse.ucsd.edu/~abakst</a> |
| OBJECTIVE                  | I am seeking a job where I can apply my research in programming languages in order to help engineers develop high quality software. I am interested in working on compilers, verification and static analysis, and infrastructure as a service.   |   |
| EDUCATION                  | <b>University of California, San Diego</b> , La Jolla, CA<br>Ph.D., Computer Science (expected 2017)<br><br><b>Massachusetts Institute of Technology</b> , Cambridge, Massachusetts<br>S.B., Computer Science, May, 2008<br>M.Eng., Computer Science, May, 2009<br>Thesis: "Enabling Diagnostics in User Interfaces for CAD Applications"<br>Web: <a href="http://hdl.handle.net/1721.1/53142">http://hdl.handle.net/1721.1/53142</a>   |   |
| PEER-REVIEWED PUBLICATIONS | <b>Predicate Abstraction for Linked Data Structures</b><br><i>VMCAI 2016: International Conference on Verification, Model Checking, and Abstract Interpretation</i><br>Alexander Bakst, and Ranjit Jhala<br><br><b>Bounded Refinement Types</b><br><i>ICFP 2015: ACM SIGPLAN International Conference on Functional Programming</i><br>Niki Vazou, Alexander Bakst, and Ranjit Jhala<br><br><b>Deterministic Parallelism via Liquid Effects</b><br><i>PLDI 2012: ACM SIGPLAN Conference on Programming Language Design and Implementation</i><br>Ming Kawaguchi, Patrick Rondon, Alexander Bakst, and Ranjit Jhala<br><br><b>CSolve: Verifying C Programs with Liquid Types (tool description)</b><br><i>CAV 2012: Computer Aided Verification</i><br>Patrick Rondon, Alexander Bakst, Ming Kawaguchi, and Ranjit Jhala |   |
| ACADEMIC EXPERIENCE        | <b>University of California, San Diego</b> , La Jolla, CA<br><i>Graduate Student</i><br><b>September 2011 - Present</b><br>My current research is on developing a new approach to verifying distributed systems, by automatically transforming a system into a simpler, single-threaded program that summarizes the behaviors of the original program.<br><br><b>Microsoft Research</b> , Redmond, WA<br><i>Research Intern</i><br><b>June 2012 - September 2012</b><br>I worked with Chris Hawblitzel at Microsoft Research on Verve, a computer-verified memory-safe operating system. We used several language-based techniques in order to specify and verify the memory-safety of Verve on multicore processors.   |   |

**Massachusetts Institute of Technology, Cambridge, Massachusetts**

*Graduate Student*

**September 2008 - June 2009**

Master of Engineering research done as an intern at Autodesk. I augmented geometric solvers in Autodesk Civil 3D in order to enable the development of user interfaces that would be able to guide users through the design process. I developed a method to allow the solvers to explore the solution space of the problem. The user is then presented with various corrections to infeasible designs, or valid ranges for unspecified parameters.

**TEACHING  
EXPERIENCE**

*UCSD - CSE 130 Programming Languages*

**January - March, 2013 & 2014**

Teaching assistant duties included leading a discussion section, holding office hours, and grading student work.

*MIT - 6.005 Elements of Software Construction*

**February - June, 2009**

Teaching assistant duties included leading a discussion section, holding office hours, and grading student work.

**PROFESSIONAL  
EXPERIENCE**

**Oracle Corporation, Nashua, New Hampshire USA**

*Software Developer*

**June 2009 - May 2011**

Developed a cluster filesystem and a dynamic volume manager (Oracle ACFS and Oracle ADVM). I worked on adding filesystem replication support to the Solaris and AIX ports of Oracle ACFS. I contributed to both products on Linux, IBM AIX, Solaris, and Windows 2003 and 2008.

**Autodesk, Manchester, New Hampshire USA**

*Master of Engineering Intern*

**June - December 2008**

I explored different ways of augmenting geometric solvers to enable user interfaces that could guide the user through a design. In particular, these user interfaces would attempt to describe the space of input parameters that result in valid geometry.