

JUNGHEE LIM

CURRICULUM VITAE

Computer Sciences Dept., Univ. of Wisconsin
1210 W. Dayton St.
Madison, WI 53706, USA
Updated Nov. 14, 2012

Phone: +1 608 886 6141
Fax: +1 608 263 9777
E-mail: junghee@cs.wisc.edu
Website: <http://www.cs.wisc.edu/~junghee>

EDUCATION

- 2006–2011 **Ph.D in Computer Sciences, May 2011** Advisor: Prof. Thomas Reps
Computer Sciences Department, University of Wisconsin-Madison, WI, USA
Dissertation: “*TSL: A System for Creating Program Analyzers and its Applications*”
- 2004–2006 **M.S. in Computer Sciences, Dec. 2006** Advisor: Prof. Thomas Reps
Computer Sciences Department, University of Wisconsin-Madison, WI, USA
- 1999–2003 **B.S. in Comp. Sci. and Eng., Jun 2003** Advisor: Prof. Jaejin Lee
Seoul National University, South Korea

RESEARCH EXPERIENCES

- Jun 2011– **Research Associate** Supervisor: Prof. Thomas Reps
present *Computer Sciences Department, University of Wisconsin-Madison, WI, USA*
My research involves in the DARPA *BET* (**B**inary **E**xecutable **T**ransforms) project focusing on binary executable program analysis, particularly (i) identifying program functional components, (ii) extracting them, and (iii) verifying extracted component properties.
- 2006–2011 **Research Assistant** Advisor: Prof. Thomas Reps
Computer Sciences Department, University of Wisconsin-Madison, WI, USA
My research work involves in the development of the TSL (Transformer Specification Language) system, and its applications on machine-code verification and debugging. The TSL system is a tool-generator to help in the creation of tools for analyzing machine code. Using the TSL system, we developed various model-checking tools, including MCVETO, for machine-code program.
- Feb. 2009– **Research Intern** Supervisor: Prof. Tzi-cker Chiueh
Apr. 2009 *Symantec Research Laboratory, Symantec Inc., CA, USA*
Developed a tool, called BCE (**B**otnet **C**ommand **E**xtractor), that analyzes botnet zombies to recover information about the commands that they respond to.

RESEARCH EXPERIENCES (Cont.)

- 2004–2006 **Research Assistant, Wisconsin Safety Analyzer (WiSA) project**
Computer Sciences Department, University of Wisconsin-Madison, WI, USA
 The WiSA project focuses on the use of static analysis to detect vulnerabilities in possibly malicious programs. My research work concerned CodeSurfer/x86, which is a prototype system that provides a framework for investigating the properties and behaviors of x86 executables. Advisor: Prof. Thomas Reps
- Aug. 2003– **Research Assistant, Advanced Compiler Laboratory** Advisor: Prof. Jaejin Lee
 Jul. 2004 *Seoul National University, South Korea*
 SNACK (Seoul National University Advanced Compiler Tool Kit) is a research project involved with the development of a series of advanced compilers for embedded systems. My research work involved the development of the postpass optimizer for ARM processors called *STACK-pop*.

PUBLICATIONS

Digital copies can be downloaded from <http://www.cs.wisc.edu/~junghee/>

Thesis

- Junghee Lim, *Transformer Specification Language: A System For Creating Analyzers and its Applications*, Ph.D. Dissertation, Computer Sciences Department, University of Wisconsin, Madison, WI, May 2011 (**Won the UW Computer Sciences Department's Outstanding Graduate Student Research Award for 2011**).

Journal Publications

- Junghee Lim and Thomas Reps. *TSL: A System for Generating Abstract Interpreters and its Applications to Machine-Code Analysis*. Submitted for journal publication, October 2012.
- W. Zhang, C. Sun, J. Lim, S. Lu, and T. Reps *ConMem: Detecting Crash-Triggering Concurrency Bugs through an Effect-Oriented Approach*. To appear on TOSEM.
- Junghee Lim, Akash Lal, and Thomas Reps. *Symbolic Analysis via Semantic Reinterpretation*. In *Int. Journal on Software Tools for Technology Transfer* 13 (STTT), 1 (2011), 61-87.

Conference Publications

- Elder, M., Lim, J., Sharma, T., Andersen, T., and Reps, T. *Symbolic Analysis via Semantic Reinterpretation*. To appear in Proceedings of 18th International Static Analysis Symposium (SAS), Venice, Italy, 2011.
- Zhang, W., Lim, J., Olichandran, R., Scherpelz, J., Jin, G., Lu, S., and Reps, T. *ConSeq: Detecting Concurrency Bugs through Sequential Errors*. In Proceedings of Architectural Support for Programming Language and Operating Systems (ASPLOS), New Port Beach, California, 2011.
 ASPLOS'11 acceptance rate: 21% (32/152).

PUBLICATIONS (Cont.)

Conference Publications (Cont.)

- A. Thakur, J. Lim, A. Lal, A. Burton, E. Driscoll, M. Elder, T. Andersen, and T. Reps. *Directed Proof Generation for Machine Code*. In Proceedings of Computer-Aided Verification (CAV), Edinburgh, Scotland, 2010.
CAV'10 acceptance rate: 35% (51/145).
- Junghee Lim, Akash Lal, and Thomas Reps. *Symbolic Analysis via Semantic Reinterpretation*. In Proceedings of the SPIN Workshop of Model Checking of Software, Grenoble, France, 2009.
SPIN'09 acceptance rate: 44% (18/41).
- Junghee Lim and Thomas Reps. *A System for Generating Static Analyzers for Machine Instructions*. In Proceedings of the International Conference on Compiler Construction (CC), Budapest, Hungary, 2008.
CC'08 acceptance rate: 25% (18/71).
(Won the EAPLS Best Paper Award at ETAPS 2008.)
- Junghee Lim, Thomas Reps, and Ben Liblit. *Extracting File Formats from Executables*. In Proceedings of the 13th Working Conference on Reverse Engineering (WCRE), Benevento, Italy, 2006.
WCRE'06 acceptance rate: 29% (24/84).
- Akash Lal, Junghee Lim, Marina Polishchuk, and Ben Liblit. *Path Optimization in Programs and its Application to Debugging*. In Proceedings of European Symposium on Programming (ESOP), Vienna, Austria, 2006.
ESOP'06 acceptance rate: 24% (21/87).
- Balakrishnan, G., Reps, T., Kidd, N., Lal, A., Lim, J., Melski, D., Yong, S., Chen, C.-H., and Teitelbaum, T. *Model checking x86 executables with CodeSurfer/86 and WPDS++*. In Proceedings of Computer Aided Verification (CAV), Edinburgh, Scotland.
CAV'05 acceptance rate: 26% (32/125).
- Chanik Park, Junghee Lim, Kiwon Kwon, Jaejin Lee, and Sang Lyul Min. *Compiler Assisted Demand Paging for Embedded Systems with Flash Memory*. In Proceedings of the 4th International Conference on Embedded Software (EMSOFT), Pisa, Italy, 2005.
EMSOFT'04 acceptance rate: 36% (31/87).

Invited Papers

- Reps, T., Lim, J., Thakur, A., Balakrishnan, G. and Lal, A. *There's plenty of room at the bottom: Analyzing and verifying machine code*. In Proc. Computer Aided Verification (CAV), Edinburgh, Scotland, 2010.
- Reps, T., Balakrishnan, G., and Lim, J. *Intermediate-representation recovery from low-level code*. In Workshop on Partial Evaluation and Program Manipulation (PEPM), Charleston, SC, 2006.
- Reps, T., Balakrishnan, G., and Lim, J. *A next-generation platform for analyzing executables*. In the 3rd Asian Symposium on Programming Language and Systems (APLAS), Tsukuba, Japan, 2005.

PUBLICATIONS (Cont.)

Reprinted in Collections

- Reps, T., Balakrishnan, G., Lim, J., and Teitelbaum, T., *A Next-Generation Platform for Analyzing Executables*. In *Malware Detection*, Advances in Information Security series, Springer-Verlag, 2006, pp. 43-61.

Other Publications and Reports

- Junghee Lim and Thomas Reps. *BCE: Extracting Botnet Commands from Bot Executables*. Tech Report TR-1668, Computer Science Department, University of Wisconsin-Madison, February 2010.
- Junghee Lim and Thomas Reps. *A System for Generating Static Analyzers for Machine Instructions*. Tech Report TR-1622r, Computer Science Department, University of Wisconsin-Madison, October 2007.
- Akash Lal, Junghee Lim and Marina Polishchuk, and Ben Liblit. *BTrace: Path Optimization for Debugging*. Tech Report TR-1535, Computer Science Department, University of Wisconsin-Madison, October 2005.
- Balakrishnan, G., Reps, T., Kidd, N., Lal, A., Lim, J., Melski, D., Yong, S., Chen, C.-H., and Teitelbaum, T. *Model checking x86 executables with CodeSurfer/86 and WPDS++*. In Workshop on Evaluation of Software Defect Detection Tools, Chicago, IL, June 2005

HONORS AND AWARDS

- Outstanding Graduate Research Award (UW Computer Sciences Department) 2011
- EAPLS Best Paper Award (with T. Reps) ETAPS 2008
European Association for Programming Languages and Systems <http://www.eapls.org>
- Symantec Research Labs Graduate Fellowship 2008–2009
<http://www.symantec.com/about/careers/college/fellowship.jsp>
- University of Wisconsin-Madison Research Assistantship 2004–2011
- Korea National IT Industry Promotion Agency Fellowship 2002–2004
- Seoul National University Research Assistantship 2003–2004
- Seoul National University Merit-Based Scholarship 1999–2003

TECHNICAL SKILLS

Computer Languages	C/C++, Java, OCAML, Scheme, Python, Perl, Assembly Languages (IA32, PPC32, ARM, etc.).
Theorem Provers	Yices, Z3
Tools	LLVM, PIN, CodeSurfer
Operating Systems	Windows, Unix, Linux, MacOS

TECHNICAL PRESENTATIONS

Feb. 2012	Analysis of Executables: Benefits and Challenges - Dagstuhl Seminar 12051 <i>TSL: A System for Automatically Creating Analyzers and its Applications</i>	Wadern, Germany
Oct. 2011	DARPA Crash site-visit <i>McWeave: Machine-Code Policy Weaving</i>	Madison, WI, USA
Apr. 2011	Dissertation Computer Sciences Dept., University of Wisconsin <i>TSL: A System for Automatically Creating Analyzers and its Applications</i>	Madison, WI, USA
Aug. 2010	Comp. Sci. & Eng. Dept., Seoul National University <i>TSL: A System for Automatically Creating Analyzers and its Applications</i>	Seoul, South Korea
Jun. 2009	SPIN Workshop of Model Checking of Software <i>Symbolic Analysis via Semantic Reinterpretation</i>	Grenoble, France
Apr. 2009	Symantec Research Laboratory <i>The TSL System and its Application on Botnet-Command Extraction</i>	Culver City, CA, USA
Feb. 2009	Symantec Research Laboratory <i>A System for Generating Static Analyzers for Machine Instructions</i>	Culver City, CA, USA
Apr. 2008	Conference on Compiler Construction (CC) <i>A System for Generating Static Analyzers for Machine Instructions</i>	Budapest, Hungary
Nov. 2007	LIAFA, Université Paris Diderot - Paris 7 <i>A System for Generating Static Analyzers for Machine Instructions</i>	Paris, France
Oct. 2006	Working Conference on Reverse Engineering (WCRE) <i>Extracting File Formats from Executables</i>	Benevento, Italy
Jan. 2006	Seoul National University <i>Analyzing Memory Accesses in x86 Executables</i>	Seoul, South Korea

PERSONAL INFORMATION

- US Visa Status: US Green Card Holder
- Country of Citizenship: South Korea
- Language Proficiency: Korean, English

REFERENCES

Available upon request.

REFERENCES**• Professor Thomas Reps**

Computer Sciences Department
University of Wisconsin-Madison
Co-President of GrammaTech Inc.
1210 W.Dayton St.
Madison
Wisconsin

Phone: +1 608 262 2091
Fax: +1 608 262 9777
E-mail: reps@cs.wisc.edu

• Professor Ben Liblit

Computer Sciences Department
University of Wisconsin-Madison
1210 W.Dayton St.
Madison
Wisconsin

Phone: +1 608 262 6617
Fax: +1 608 262 9777
E-mail: liblit@cs.wisc.edu

• Professor Susan Horwitz

Computer Sciences Department
University of Wisconsin-Madison
1210 W.Dayton St.
Madison
Wisconsin

Phone: +1 608 262 7946
Fax: +1 608 262 9777
E-mail: horwitz@cs.wisc.edu