

# Vaibhav Sharma

1053 29th Avenue SE Apt F  
Minneapolis, MN 55414

Ph: 845-588-5188

vaibhav@umn.edu

<https://github.com/vaibhavbsharma>

## Education

- **University of Minnesota – Twin Cities, Minneapolis, USA**  
*PhD, Computer Science and Engineering, GPA: 3.93/4* 2015 – 2020 (Expected)  
Advisor: Professor Stephen McCamant
- **Michigan State University, East Lansing, USA**  
*M.S., Computer Science and Engineering, GPA: 3.95/4* 2013 – 2015  
Thesis: Continuous User Authentication and Identification Using User Interface Interactions  
Advisor: Professor Richard Enbody
- **Mumbai University, India**  
*B.E., Computer Engineering, Aggregate: 68%* 2003 – 2007

## Publications

- **Vaibhav Sharma\***, Soha Hussein\*, Michael W. Whalen, Stephen McCamant, Willem Visser, “Java Ranger: Static Region Summaries for Efficient Symbolic Execution of Java (Under Review),” *Automated Software Engineering*, 2019, \*=both authors contributed equally
- **Vaibhav Sharma**, Kesha Hietala, Stephen McCamant, “Finding Substitutable Binary Code by Synthesizing Adaptors (Under Review),” *IEEE Transactions on Software Engineering*, 2019
- Taejoon Byun, **Vaibhav Sharma**, Abhishek Vijayakumar, Sanjai Rayadurgan, Darren Cofer, “Input Prioritization for Testing Neural Networks,” *1st IEEE International Conference on Artificial Intelligence Testing*, 2019
- Navid Emamdoost, **Vaibhav Sharma**, Taejoon Byun, Stephen McCamant, “Binary Mutation Analysis of Tests Using Reassembleable Disassembly,” *Binary Analysis Research Workshop*, 2019
- **Vaibhav Sharma**, Taejoon Byun, Stephen McCamant, Sanjai Rayadurgan, Mats Heimdahl, “Contract Discovery From Black-box Components,” *Workshop on Automated Specification Inference (WASPI)*, 2018
- **Vaibhav Sharma**, Stephen McCamant, “Synthesizing Adaptors For Binary Code Using Symbolic Execution,” *Second International Workshop on Usages of Symbolic Execution (USE)*, 2018, **Best Presentation Award**
- **Vaibhav Sharma**, Kesha Hietala, Stephen McCamant, “Finding Substitutable Binary Code for Reverse Engineering by Synthesizing Adaptors,” *11th IEEE Conference on Software Testing, Verification, and Validation (ICST)*, 2018
- **Vaibhav Sharma** and Richard Enbody, “User Authentication And Identification From User Interface Interactions on Touch-Enabled Devices,” *10th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, 2017, **Best Paper Award Runner-up**
- **Vaibhav Sharma**, Michael W. Whalen, Stephen McCamant, Willem Visser, “Veritesting Challenges in Symbolic Execution of Java,” *Java Pathfinder Workshop*, 2017
- **Vaibhav Sharma**, Taejoon Byun, Stephen McCamant, Sanjai Rayadurgam, Mats Heimdahl, “Discovering Instructions for Robust Binary-level Coverage Criteria,” *Proceedings of 2017 ACM International Workshop on Testing Embedded and Cyber-Physical Systems (TECPS)*, 2017
- Taejoon Byun, **Vaibhav Sharma**, Sanjai Rayadurgam, Stephen McCamant, Mats P.E. Heimdahl, “Towards Rigorous Object-Code Coverage Criteria,” *The 28th International Symposium on Software Reliability Engineering (ISSRE)*, 2017
- **Vaibhav Sharma**, Kesha Hietala, Stephen McCamant, “Finding Semantically-Equivalent Binary Code by Synthesizing Adaptors,” *Midwest PL Summit*, 2016 (poster)

## Work Experience

- **Security Engineer Intern, Trail of Bits**, December 2018 – January 2019  
I implemented dynamic state merging for symbolic execution of X86 binary code using Manticore.
- **Software Developer Engineer Intern, Amazon Web Services**, June 2018 – August 2018  
I interned in the Automated Reasoning Group at Amazon Web Services for automating penetration testing of services at AWS.
- **Research Assistant, University of Minnesota – Twin Cities**, Sept 2015 – present  
Extended a binary-level symbolic execution-based tool (FuzzBALL) for automatic synthesis of binary wrapper code which creates equivalence between two functions
- **Teaching Assistant, Michigan State University**, Aug 2013 – Aug 2015  
Delivered in-class presentations, conducted lab sessions, for 3 undergraduate-level courses
- **Samsung Research India - Bangalore**, Browser Development, June 2012 – June 2013  
Developed web page rendering modules in WebKit2EFL browser engine used in the Tizen operating system
- **Bally Technologies**, Operating System Development, March 2010 – June 2012  
Integrated a WebKitGtk+ browser engine with the slot machine operating system
- **Amdocs Development Center India**, Order Management, Aug 2007 – March 2010  
Maintained a Tuxedo-based backend of an order management system used by telecommunication companies

## Awards

- Doctoral Dissertation Fellowship, Fall 2019 – Spring 2020
- Best Presentation Award, USE 2018
- Best Paper Runner-up Award, WiSec 2017
- NSF Conference Travel Grant, ACM Conference Travel Grant, WiSec 2017
- Richard Reid Fellowship (College of Engineering, Michigan State University), Summer 2014

## Graduate Courses

- Programming Languages, Introduction to Compilers, Security/Privacy in Computing
- Introduction to Computer Security, Data Mining, Pattern Recognition

## Service

- Reviewer for Journal of Software Testing, Verification and Reliability (May 2019-present)
- Website administrator for Java Pathfinder (December 2017-November 2018)
- Contributed optimization features, bug fixes, system call support to FuzzBALL (2014-present)
- Supported development of an Android app for navigating the Michigan State University campus (2013-2015)