

# Rahul Pandita

## Curriculum Vitae

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## Research Interests

I am a Senior Research Scientist at [Phase Change Software](#). My primary research interests are in data science and automated software engineering. I specifically work on applying Natural Language Processing techniques on software artifacts to improve developer/tester/end-user productivity.

## Education

- 2015 **Ph.D.**, *Computer Science, North Carolina State University*, Raleigh, NC, USA.  
Advisor [Dr. Laurie Williams](#), REPORT: Inferring Semantic information from Natural Language Software Artifacts
- 2011 **M.S.**, *Computer Science, North Carolina State University*, Raleigh, NC, USA.  
Advisor [Dr. Tao Xie](#), REPORT: Guided Test Generation for Coverage Criteria
- 2007 **B.E.**, *Computer Science, AVCoE, Pune University*, Maharashtra, INDIA.

## Awards

- 2016 FSE 2016 Mentorship Session Scholarship Award
- 2013 Student Grant to attend USENIX Security Symposium
- 2012 FDA Group Recognition Award
- 2010 Virtual Teaching Assistant Award, NCSU Department of Computer Science

## PUBLICATIONS

### Peer-reviewed Conference/Journal Publications (12 total)

- 2017 **Are Vulnerabilities Discovered and Resolved like Other Defects During Software Development?**. Patrick Morrison, Rahul Pandita, Xusheng Xiao, Ram Chillarege, and Laurie Williams *Empirical Software Engineering - 2017*  
**TMAP: Discovering Relevant API Methods through Text Mining of API Documentation**. Rahul Pandita, Raoul Praful Jetley, Sithu D Sudarsan, Tim Menzies, and Laurie Williams. *Journal of Software: Evolution and Process 2017*.
- 2016 **Designing for Dystopia: Software Engineering Research for the Post-Apocalypse**. Titus Barik, Rahul Pandita, Justin Allen Middleton, and Emerson Murphy-Hill. FSE: Visions and Reflections Track 2016. 9/34(26.5%)  
**ICON: Inferring Temporal Constraints from Natural Language API Descriptions**. Rahul Pandita, Kunal Taneja, Laurie Williams, and Teresa Tung. *In Proceedings of the 32<sup>nd</sup> International Conference on Software Maintenance and Evolution (ICSME'16), Raleigh, NC, USA. October 2016.* 37/127(29%) [invited for journal extension](#)  
**A Cross-Tool Communication Study on Program Analysis Tool Notifications**. Brittany Johnson, Rahul Pandita, Justin Smith, Denae Ford, Sarah Elder, Emerson Murphy-Hill, Sarah Heckman, Caitlin Sadowski. *In Proceedings of the 24<sup>th</sup> ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE'16), Seattle, WA, USA. November 2016.* 74/273(27.1%)  
**Veteran Developers' Contributions and Motivations: An Open Source Perspective**. Patrick Morrison, Emerson Murphy-Hill, Rahul Pandita, and Anne McLaughlin. *In Proceedings of IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC'16), September 2016, Cambridge, UK* 15/45(33%)
- 2015 **Discovering Likely Mappings between APIs using Text Mining**. Rahul Pandita, Raoul P. Jetley, Sithu D. Sudarsan, and Laurie Williams. *In Proceedings of the 15<sup>th</sup> IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2015), Bremen, Germany, September 2015.* 24/68(35%) [invited for journal extension](#)

**Bespoke Tools: Adapted to the Concepts Developers Know.** Brittany Johnson, Rahul Pandita, Emerson Murphy-Hill, and Sarah Heckman. *In Proceedings of the 10<sup>th</sup> Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering New Ideas and Emerging Results Track (ESEC-FSE NIER'15), Bergamo, Italy, August 2015.* (27%)

**Enabling Forensics by Proposing Heuristics for Identifying Mandatory Log Events.** Jason King, Rahul Pandita, and Laurie Williams. *In Proceedings of the Symposium and Bootcamp on the science of security (HOTSOS'15), Illinois, USA, April 2015*

2013 **WHYPER: Towards Automating Risk Assessment of Mobile Applications.** Rahul Pandita, Xusheng Xiao, Wei Yang, William Enck, Tao Xie. *In Proceedings of the 22<sup>nd</sup> USENIX Security Symposium (USENIX Security '13), Washington DC, USA, August 2013.* 45/277(16.2%)

2012 **Inferring Method Specifications from Natural Language API Descriptions.** Rahul Pandita, Xusheng Xiao, Hao Zhong, Tao Xie, Stephen Oney, and Amit Paradkar. *In Proceedings of the 34<sup>th</sup> International Conference on Software Engineering (ICSE 2012), Zurich, Switzerland, July 2012.* 87/408(21%)

2010 **Guided Test Generation for Coverage Criteria.** Rahul Pandita, Tao Xie, Nikolai Tillmann, and Jonathan de Halleux. *In Proceedings of the 26<sup>th</sup> IEEE International Conference on Software Maintenance (ICSM 2010), Timișoara, Romania, September 2010.* 36/133(27%)

### Peer-reviewed Refereed Workshop Publications (2 total)

2018 **Towards J.A.R.V.I.S. for Software Engineering: Lessons Learned in Implementing a Natural Language Chat Interface** Rahul Pandita, Steven Bucuvalas, Hugolin Bergier, Aleksandar Chakarov and Elizabeth Richards *To appear in Workshop on NLP for Software Engineering 2018.*

2013 **Literature Review of Testing Techniques for Medical Device Software.** John J. Majikes, Rahul Pandita, and Tao Xie. *In Proceedings of the 4th Medical Cyber-Physical Systems Workshop (MCPS 2013), Philadelphia, USA, April 2013.*

### Miscellaneous

2014 Poster: **Improving Mobile Application Security by Enhancing User Perceptions of Application Behaviors.** Wei Yang, Xusheng Xiao, Rahul Pandita, William Enck, and Tao Xie. *In Proceedings of the Symposium and Bootcamp on the Science of Security (HOTSOS 2014), Raleigh, USA, April 2014.*

2013 **22<sup>nd</sup> USENIX Security Symposium Conference Summaries,** USENIX ;login Magazine, Rahul Pandita, Dec, 2013

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## Work Experience

### Industry

Aug'16 - **Senior Research Scientist,** PHASE CHANGE SOFTWARE, Golden, CO, USA.

*Present* Preliminary exploration as well as design and implementation of novel proof-of-concepts to objectively access and recommend best software development practices in the area of program comprehension and human computer interaction

Supervisor Kenneth Hei

May-Aug'13 **Summer Intern,** ACCENTURE TECHNOLOGY LABS, San Jose, CA, USA.

Designed and implemented an approach to infer usage constraints from natural language API documents of REST Services. The inferred constraints are directed towards automatic verification and validation of both the REST API as well as clients consuming the API.

Mentors Dr. Kunal Taneja, Dr. Qing Xie

May-Aug'10 **Summer Intern,** US FOOD AND DRUG ADMINISTRATION, SilverSpring, MD, USA.

Aug-Dec'11 Development of a framework to perform efficient retrieval of information from medical adverse event reports using textual mining and display results to the user in a graphical reports. Designed and implemented an approach to infer semantic relationships from Natural Language Text. Designed and implemented a Apache Lucene based generic search framework on principles of semantic text mining. Furthermore, was also responsible to develop the web-based frontend to interact with the system using JSP and JQuery.

Mentors Dr. Raoul Jetley, Dr. Sithu Sudarsan

May-Aug'11 **Summer Intern,** IBM INDIA RESEARCH LABS, Bangalore, India.

Designed and implemented an approach to understand unit test evolution; specifically focusing on how test-repair is performed.

Mentors Dr. Saurabh Sinha, Dr. Suresh Thummalapenta

May'07- **Software Engineer**, HUGHES SYSTIQUE CORPORATION, Gurgaon, India.

Dec'08 Development of network management system to manage satellite base service station components. Designed and implemented SIP-XMPP Gateway for IM compatibility. Performed Integration testing and acceptance testing at the client site.

Supervisor Mr. Danish Aggarwal

## Academic

Jan'16-Aug'16 **Post Doctoral Researcher**, NORTH CAROLINA STATE UNIVERSITY, Raleigh, NC, USA.

Preliminary exploration as well as design and implementation of novel frameworks to objectively access and recommend best software development practices for security and privacy.

Supervisors Dr. Laurie Williams and Dr. Munindar Singh

## Technical skills

Text Mining, Natural Language Processing, Machine Learning, Program Analysis, Software Engineering, Software Testing

Frameworks Hibernate, junit, Microsoft Pex, Struts, Spring, Apache Tomcat, Stanford Parser for NLP, Apache Lucene

Platforms Windows, Unix, Android

Programming/Scripting J2EE, JavaScript, JSP, C#, HTML, CSS, JQuery

Tools Eclipse, Microsoft Visual Studio, GIT, SVN

## Relevant Courses

- Software Reliability and Testing
- Design and Analysis of Algorithms
- Service Oriented Computing
- E Commerce
- Database Management Systems
- Software Engineering
- Software Security
- Automata and Computation Theory
- Computer Networks
- Human Computer Interaction

## Professional Activities

PC-Member PROMOTO'15, ICSME'16 Industry Track, ICSME'17 Industry Track

Reviewer Transactions on Software Engineering and Methodology (TOSEM), Empirical Software Engineering (ESEM), Journal of System and Software (JSS)

Guest Editor 2018 JCST Special Section on "Software Systems"

External Reviewer UbiComp'14, DSN'13, Journal for Empirical Software Engineering'14, International Journal of Distributed Sensor Networks'16

Co-Reviewer WWW'13, ICSE'11, FSE'13, ASE'10'14

## References

**Available Upon Request**