Rahul Pandita

Curriculum Vitae

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Google Scholar Profile

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 in the area of program comprehension targeted towards improving 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.

Work Experience

Industry

Aug'16 - *Present* **Senior Research Scientist**, PHASE CHANGE SOFTWARE, Golden, CO, USA.
As a researcher at Phase Change Software:
- I am responsible for keeping up-to-date with relevant scientific and technical developments in software engineering focusing on program comprehension and human computer interaction. I gather knowledge and research leading-edge technology to develop technology vision for transferring these technologies to practice. For instance, I lead the teams that develops the MIA chat-bot interface and agent interactions for our cognitive program analysis framework. I also established a research collaboration between Oregon Sate University and Phase Change to explore developer context and cognitive biases in software development.
- I lead teams in approved research assignments and prototypes to prove out design concepts. This often involves setting out requirements and designing, developing, and testing software prototypes per specified requirements. I also work with the team, to publish the public facing research in reputed scientific venues.
- I am part of the core group that sets out architectural requirements for the product. I develop and document system designs meeting functional requirements and design priorities for projects. For instance, I spearheaded the effort to decompose our monolith program analysis framework into micro-services framework. I worked with team to introduce and oversee DevOps development paradigm at PhaseChange.

Supervisor Mr. Davin Lafon, Mr. Kenneth Hei

May'07-Dec'08 **Software Engineer**, HUGHES SYSTIQUE CORPORATION, Gurgaon, India.
- 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

Internships

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
May-Aug'12 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 front-end to interact with the system using JSP and JQuery.

Mentors Dr. Raoul Jetley, Dr. Sithu Sudarsan

Technical skills

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

Frameworks Docker, Jenkins, Kubernetes, Ansible, Tensorflow, Spring, Apache Lucene

Platforms Unix, Windows, GCP

Programming/ Scripting Java, JavaScript, HTML, Python, R, CSS

Tools IntelliJ, Eclipse, Microsoft Visual Studio Code, GIT

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

2020 **A Tale from the Trenches: Cognitive Biases and Software Development**. Souti Chattopadhyay, Nicholas Nelson, Audrey Au, Natalia Morales, Christopher Sanchez, Rahul Pandita and Anita Sarma. *In Proceedings of 42st ACM/IEEE International Conference on Software Engineering, ICSE 2020.* **ACM SIGSOFT Distinguished Paper Award**

2019 **Latent Patterns in Activities: A Field Study of How Developers Manage Context**. Souti Chattopadhyay, Nicholas Nelson, Yenifer Ramirez Gonzalez, Annel Amelia Leon, Rahul Pandita and Anita Sarma. *In Proceedings of 41st ACM/IEEE International Conference on Software Engineering, ICSE 2019.*

2018 **No half-measures: A study of manual and tool-assisted end-user programming tasks in Excel**. Rahul Pandita, Chris Parnin, Felienne Hermans and Emerson Murphy-Hill. *In Proceedings of IEEE Symposium on Visual Languages and Human-Centric Computing, VL/HCC 2018.*

Mapping the Field of Software Development Security Metrics. Patrick Morrison, David Moye, Rahul Pandita, and Laurie Williams. *In ELSEVIER Information and Software Technology Journal 2018.*

Are vulnerabilities discovered and resolved like other defects? Patrick Morrison, Rahul Pandita, Xusheng Xiao, Ram Chillarege, and Laurie Williams. *In Proceedings of 40th International Conference on Software Engineering, ICSE 2018 * Journal First Papers Track*

2017 **Are Vulnerabilities Discovered and Resolved like Other Defects During Software Development?**. Patrick Morrison, Rahul Pandita, Xusheng Xiao, Ram Chillarege, and Laurie Williams *In Empirical Software Engineering Journal 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. *In 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. *In Proceedings of ACM SIGSOFT International Symposium on the Foundations of Software Engineering FSE: Visions and Reflections Track 2016.*

ICON: Inferring Temporal Constraints from Natural Language API Descriptions. Rahul Pandita, Kunal Taneja, Laurie Williams, and Teresa Tung. *In Proceedings of the 32nd International Conference on Software Maintenance and Evolution (ICSME'16), Raleigh, NC, USA. October 2016. 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 24th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE'16), Seattle, WA, USA. November 2016.*

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*

2015 **Discovering Likely Mappings between APIs using Text Mining**. Rahul Pandita, Raoul P. Jetley, Sithu D. Sudarsan, and Laurie Williams. *In Proceedings of the 15th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2015), Bremen, Germany, September 2015. 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 10th 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.*

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 22nd USENIX Security Symposium (USENIX Security '13), Washington DC, USA, August 2013.*

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 34th International Conference on Software Engineering (ICSE 2012), Zurich, Switzerland, July 2012.*

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

Peer-reviewed Refereed Workshop Publications

2019 **A Conceptual Framework for Engineering Chatbots** Pankaj R Telang, Anup K Kalia, Maja Vukovic, Rahul Pandita, and Munindar P Singh. In *Journal of IEEE Internet Computing 2019.*

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

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, ICSME'18 Research Track, ICSME'18 Industry Track, ADMS'18, FairWare'18, ICSE'19 NIER Track, FSE'19 SRC, ISEC'20 Research Track, ASE'20, VL/HCC'20 Poster Track, ICSME'20 Research Track, ISEC'21 Research Track
Reviewer	Transactions on Software Engineering and Methodology (TOSEM), Empirical Software Engineering (EMSE), Journal of System and Software (JSS), Empirical, Transactions on Services Computing (TSC), Future Generation Computer Systems, Transactions on Internet Technology (TOIT), IEEE Access
Guest Editor	2018 Journal of Computer Science and Technology (JCST) Special Section on "Software Systems"
External Reviewer	UbiComp'14, DSN'13, International Journal of Distributed Sensor Networks'16
Co-Reviewer	WWW'13, ICSE'11, FSE'13, ASE'10'14

References

Available Upon Request