

Venkatesh Prasad Ranganath

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Education

- Ph.D. (Computer Science), Kansas State University, USA. (2006)
– *Scalable and Accurate Approaches to Program Dependence Analysis, Slicing, and Verification of Concurrent Object Oriented Programs*
- M.S. (Computer Science), Kansas State University, USA. (2002)
– *Object-flow analysis for optimizing finite-state models of Java Software*
- B.E. (Computer Science and Engineering), Bangalore University, India. (1997)

Employment

- Assistant Professor, Kansas State University, USA. (Aug 2015 – Present)
- Visiting Assistant Professor, Kansas State University, USA. (Feb 2014 – Aug 2015)
- Researcher, Microsoft Research, India. (Aug 2007 – Aug 2013)
- Software Engineer, Agitar Software, USA. (Sep 2006 – May 2007)
- Instructor, Kansas State University, USA. (Sep 2005 – Apr 2006)
- Graduate Research Assistant, Kansas State University, USA. (May 2002 – Aug 2005)
- Graduate Teaching Assistant, Kansas State University, USA. (Sep 1999 – Apr 2002)
- Software Engineer, Wipro Global R&D (Wipro Technologies), India. (Sep 1997 – Jul 1999)

Peer-reviewed Journal Publications

1. *Mining Quantified Temporal Rules: Formalism, Algorithms, and Evaluation* – David Lo, G. Ramalingam, Venkatesh Prasad Ranganath, and Kapil Vaswani. *Science of Computer Programming (SCP)*, Volume 77, Issue 6, 2012.
2. *Logical Concurrency Control from Sequential Proofs* – Jyotirmoy Deshmukh, G. Ramalingam, Venkatesh Prasad Ranganath, and Kapil Vaswani. *Logical Methods in Computer Science (LMCS)*, Volume 7, Issue 3, 2011.
3. *A New Foundation For Control-Dependence and Slicing for Modern Program Structures* – Venkatesh Prasad Ranganath, Torben Amtoft, Anindya Banerjee, Matthew B. Dwyer, and John Hatcliff. *ACM Transactions on Programming languages and Systems (TOPLAS) - Special Issue ESOP 2005*, Volume 20, Issue 5, 2007.
4. *Slicing Concurrent Java Programs using Indus and Kaveri* – Venkatesh Prasad Ranganath and John Hatcliff. Special section of the *International Journal on Software Tools for Technology Transfer (STTT)*, Volume 9, Issue 5-6, 2007.

5. *Exploiting Object Escape and Locking Information in Partial-Order Reductions for Concurrent Object-Oriented Programs* – Matthew B. Dwyer, John Hatcliff, Robby, and Venkatesh Prasad Ranganath. *International Journal on Formal Methods in System Design (FMSD)*, Volume 25, 2004.

Peer-reviewed Conference/Workshop Publications

1. *Ghera: A Repository of Android App Vulnerability Benchmarks* – Joydeep Mitra and Venkatesh-Prasad Ranganath. *International Conference on Predictive Modeling and Data Analytics in Software Engineering (PROMISE) 2017*.
2. *Experimental Study with Real-world Data for Android App Security Analysis using Machine Learning* by Sankardas Roy, Jordan DeLoach, Yuping Li, Doina Caragea, Xinming Ou, Nicolae Herndon, Venkatesh Prasad Ranganath, HongMin Li, and Nicolais Guevara. *Annual Computer Security Applications Conference (ACSAC) 2015*.
3. *Ecosphere Principles for Medical Application Platforms* by Yu Jin Kim, Venkatesh-Prasad Ranganath, John Hatcliff, Robby and Sam Procter. *International Conference on Healthcare Informatics (ICHI) 2015*.
4. *Communication Patterns for Interconnecting and Composing Medical Systems* – Venkatesh-Prasad Ranganath, Yu Jin Kim, John Hatcliff, and Robby. *International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2015*. (Reviewed Invited Paper)
5. *Integrated Clinical Environment Device Model: Stakeholders and High Level Requirements* – Yu Jin Kim, John Hatcliff, Venkatesh-Prasad Ranganath, Robby, and Sandy Weininger. *Medical Cyber Physical Systems Workshop, Medical CPS 2015*.
6. *Compatibility Testing using Patterns-based Trace Comparison* – Venkatesh-Prasad Ranganath, Pradip Vallathol, and Pankaj Gupta. *International Conference on Automated Software Engineering, ASE 2014*. Acceptance: 19.9%
7. *Extrinsic Influence Factors in Software Reliability: A Study of 200,000 Windows Machines* – Christian Bird, Venkatesh Prasad Ranganath, Thomas Zimmermann, Nachiappan Nagappan, and Andreas Zeller. *International Conference on Software Engineering (SEIP track), ICSE 2014*. Acceptance: 21%
8. *Structural and Temporal Patterns-based Features* – Venkatesh Prasad Ranganath and Jithin Thomas. *International Workshop on Data Analysis Patterns in Software Engineering, DAPSE 2013*.
9. *Logical Concurrency Control from Sequential Proofs* – Jyotirmoy Deshmukh, G. Ramalingam, Venkatesh Prasad Ranganath, and Kapil Vaswani. *European Symposium on Programming, ESOP 2010*. Acceptance: 25%
WINNER OF ETAPS BEST PAPER AWARD.
10. *Mining Quantified Temporal Rules: Formalism, Algorithms, and Evaluation* – David Lo, G. Ramalingam, Venkatesh Prasad Ranganath, and Kapil Vaswani. *Working Conference on Reverse Engineering, WCRE 2009*. Acceptance: 25.3%

11. *Isolator: Dynamically Ensuring Isolation in Concurrent Programs* – G. Ramalingam, Sriram K. Rajamani, Venkatesh Prasad Ranganath, and Kapil Vaswani. *International Conference on Architectural Support for Programming Languages and Operating Systems, ASPLOS 2009*. Acceptance: 26%
12. *An Overview of the Indus Framework for Analysis and Slicing of Concurrent Java Software* – Venkatesh Prasad Ranganath and John Hatcliff. *International Workshop on Source Code Analysis and Manipulation, SCAM 2006*. (Keynote)
13. *Evaluating the Effectiveness of Slicing for Model Reduction of Concurrent Object-Oriented Programs* – Matthew B. Dwyer, John Hatcliff, Matthew Hoosier, Venkatesh Prasad Ranganath, Robby, and Todd Wallentine. *International Conference on Tools and Algorithms for the Construction and Analysis of Systems, TACAS 2006*. Acceptance: 27%
14. *Automatic code generation for LYE, a high-performance caching SOAP implementation* – Venkatesh Prasad Ranganath, Andrew King, and Daniel Andresen. *International Conference on Semantic Web and Web Services, SWWS 2006*. Acceptance: 32%
15. *Towards highly optimized real-time middleware for software product-line architectures* – Arvind S Krishna, Aniruddha Gokhale, Douglas C. Schmidt, Venkatesh Prasad Ranganath, and John Hatcliff. *ACM SIGBED Review - Special issue: The work-in-progress (WIP) session of the RTSS 2005*.
16. *A New Foundation For Control-Dependence and Slicing for Modern Program Structures* – Venkatesh Prasad Ranganath, Torben Amtoft, Anindya Banerjee, Matthew B. Dwyer, and John Hatcliff. *European Symposium on Programming, ESOP 2005*. Acceptance: 24.5%
17. *Kaveri: Delivering Indus Java Program Slicer to Eclipse* – Ganeshan Jayaraman, Venkatesh Prasad Ranganath, and John Hatcliff. *International Conference on Fundamental Approaches to Software Engineering, FASE 2005*.
18. *LYE: high performance SOAP with multi-level caching* – Venkatesh Prasad Ranganath, David Saxton, and Daniel Andresen. *International Conference on Parallel and Distributed Computing and Systems, PDCS 2004*. Acceptance: 66%
NOMINATED FOR BEST PAPER AWARD.
19. *LYE: a high performance caching SOAP implementation* – Daniel Andresen, David Saxton, Kiran Devaram, and Venkatesh Prasad Ranganath. *International Conference on Parallel Processing, ICPP 2004*. Acceptance: 34.2%
20. *Pruning Interference and Ready Dependence for Slicing Concurrent Java Programs* – Venkatesh Prasad Ranganath and John Hatcliff. *International Conference on Compiler Construction, CC 2004*. Acceptance: 32.7%
21. *A Correlation Framework for CORBA Component Model* – Georg Jung, John Hatcliff, and Venkatesh Prasad Ranganath. *International Conference on Fundamental Approaches to Software Engineering, FASE 2004*. Acceptance: 24.1%
22. *Cadena: An Integrated Development Environment for Analysis, Synthesis, and Verification of Component-based Systems* – Adams Child, Jesse Greenwald, Venkatesh Ranganath, Xi-anhua Deng, Matthew Dwyer, John Hatcliff, Georg Jung, Prashant Shanti, and Gurdip

Singh. *International Conference on Fundamental Approaches to Software Engineering, FASE 2004*.

23. *A Set-based Approach to Packet Classification* – Venkatesh Prasad Ranganath and Daniel Andresen. *International Conference on Parallel and Distributed Computing and Systems, PDCS 2003*. Acceptance: 66%
NOMINATED FOR BEST PAPER AWARD.
24. *CADENA: Enabling CCM-based Application Development in Eclipse* – Venkatesh Prasad Ranganath, Adam Childs, Jesse Greenwald, Matthew B. Dwyer, John Hatcliff and Gurdip Singh. *Workshop on eclipse technology exchange, eTX 2003*.
25. *Cadena: An Integrated Development, Analysis, and Verification Environment for Component-based Systems* – John Hatcliff, William Deng, Matthew B. Dwyer, Georg Jung, and Venkatesh Prasad Ranganath. *International Conference on Software Engineering, ICSE 2003*. Acceptance: 12.9%
26. *Slicing and Partial Evaluation of CORBA Component Model Designs for Avionics System* – John Hatcliff, William Deng, Matthew B. Dwyer, Georg Jung, Venkatesh Prasad Ranganath, and Robby. *Workshop on Partial Evaluation and Program Manipulation, PEPM 2003*.

Book Chapters

1. *Embrace Dynamic Artifacts in Perspectives on Data Science for Software Engineering*, 2016. Published by Morgan Kaufmann. ISBN: 978-0128042069.
2. *While Models are Good, Simple Explanations are Better in Perspectives on Data Science for Software Engineering*, 2016. Published by Morgan Kaufmann. ISBN: 978-0128042069.

Miscellaneous Publications

1. *Controlling Non-determinism for Semantic Guarantees* – Sriram Rajamani, G. Ramalingam, Venkatesh Prasad Ranganath, and Kapil Vaswani. *Exploiting Concurrency Efficiently and Correctly, (EC)², a CAV 2008 workshop*.
2. *Component-Oriented Programming and Datacenter Applications* – Venkatesh Prasad Ranganath. *The Rise and Rise of the Declarative Datacentre, R2D2 2008, a research meeting*.
3. *Enabling Efficient Partial Order Reductions for Model Checking Object-Oriented Programs Using Static Calculation of Program Dependences* – Venkatesh Prasad Ranganath, John Hatcliff, and Robby. 2007.
4. *Notes on Interference Dependences* – Venkatesh Prasad Ranganath. 2007.
5. *Notes on Atomicity* – Venkatesh Prasad Ranganath. 2006.
6. *Enriching Component Interfaces with Checkable Dependence Specifications (Technical Report #2005-5)* – Venkatesh Prasad Ranganath, Georg Jung, John Hatcliff, and Matthew B. Dwyer.

Patents

1. *Compatibility Testing Using Traces, Linear Temporal Rules, and Behavioral Models* – Randall Edward Aull, Pankaj Bharti Gupta, Robert Eugene Harris Jr, Jane Evguenia Lawrence, Venkatesh-Prasad Ranganath, and Pradip Harindran Vallathol, 2012. Patent US 8892493 B2. (Pending)
2. *Temporal Rule-Based Feature Definition and Extraction* – Venkatesh-Prasad Ranganath, Piyush Goyal, Pradip Harindran Vallathol, and Ganesan Ramalingam, 2010. Patent US 8538909 B2.
3. *Abstracting Events for Data Mining* – David Lo, Ganesan Ramalingam, Venkatesh-Prasad Ranganath, and Kapil Vaswani, 2009. Patent US 8280899 B2.
4. *Identifying Concurrency Control from a Sequential Proof* – Ganesan Ramalingam, Sriram Rajamani, Venkatesh-Prasad Ranganath, Kapil Vaswani, and Jyotirmoy Vinay Deshmukh, 2008. Patent US 20100169618 A1. (Pending)
5. *System to Reduce Interference in Concurrent Programs* – Sriram Rajamani, Ganesan Ramalingam, Venkatesh-Prasad Ranganath, and Kapil Vaswani, 2008. Patent US 7941616 B2.

Teaching Portfolio

CIS640 - Software Testing Techniques. Spring 2016, 2017.

CIS841 - Verification and Validation. Fall 2015, 2016.

CIS771 - Software Specification. Spring 2015.

Software Portfolio

Ghera Repository of Android App Vulnerability Benchmarks.

<https://bitbucket.org/secure-it-i/android-app-vulnerability-benchmarks/>

Technologies: Java and Android

Tark Toolkit to mine structural and linear temporal patterns.

<http://research.microsoft.com/en-us/projects/tark> (1530 downloads)

Technologies: C# and F#

Indus Library to analyze and slice concurrent Java programs.

<http://indus.projects.cis.ksu.edu> (110,000+ downloads until 2016)

Technologies: Java and Eclipse

Cadena Toolkit to design, analyze, and synthesize component-based systems.

<http://cadena.projects.cis.ksu.edu> (21,000+ downloads until 2016)

Technologies: Java and Eclipse

Bandera Toolkit to verify Java programs.

<http://bandera.projects.cis.ksu.edu> (24,000+ downloads until 2016)

Technologies: Java and Eclipse

Professional Services

Social Media Chair of International Symposium of Foundations of Software Engineering (FSE) 2016.

Local co-chair of Asian Symposium on Programming Languages and Systems (APLAS) 2008.

Program committee member at following venues.

ACSEAC '12 African Conference on Software Engineering & Applied Computing

CSI '06 National Annual Convention, organized by the Computer Society of India

DAPSE '13 International Workshop on Data Analysis Patterns in Software Engineering

ISEC '13, '12, '11, '10, '09 India Software Engineering Conference

ISSRE '12 International Symposium on Software Reliability Engineering

NFM'16 NASA Formal Methods Symposium

PADTAD '12 Workshop on Parallel and Distributed Systems: Testing, Analysis, and Debugging

SEDE '12 International Conference on Software Engineering and Data Engineering

RV '12 International Conference on Runtime Verification

Reviewer for following journals/magazines.

JCST Journal of Computer Science and Technology

JOT Journal of Object Technology

SCP Science of Computer Programming

STTT International Journal on Software Tools for Technology Transfer

TECS ACM Transactions on Embedded Computing Systems

TOPLAS ACM Transactions on Programming Languages and Systems

TOSEM ACM Transactions on Software Engineering and Methodology

TSE IEEE Transactions on Software Engineering

External reviewer at following venues.

APLAS'08 Asian Symposium on Program Languages and Systems

ATVA '13 International Symposium on Automated Technology for Verification and Analysis

CAV'09 Computer Aided Verification

DEBS'05 International Workshop on Distributed Event-Based Systems

EAIT'06 International Conference on Emerging Applications of IT

eTX'04 Eclipse Technology Exchange Workshop

FASE'04 Fundamental Approaches to Software Engineering

FSE'09 Foundations of Software Engineering

FTFJP'05 ECOOP Workshop on Formal Techniques for Java-like Programs

ICISS'09 International Conference on Information Systems Security

ICSE'10,'09,'08 International Conference on Software Engineering
ISSTA'08 International Symposium on Software Testing and Analysis
OOPSLA'09 International Conference on Object Oriented Programming, Systems, Languages and Applications
PASTE'05 Workshop on Program Analysis for Software Tools and Engineering
PLAS'06 Workshop on Programming Languages and Analysis for Security
PLDI'06,'04 International Conference on Programming Language Design and Implementation
POPL'09,'07,'06 Symposium on Principles of Programming Languages
PPOPP'11 Annual Symposium on Principles and Practice of Parallel Programming
SAS'06 International Static Analysis Symposium
SAVCBS'05 Specification and Verification of Component-Based Systems Workshop Engineering
TACAS'08 International Conference on Tools and Algorithms for Construction and Analysis of Systems

Member of Agency Review Panels.

NSF National Science Foundation 2016

DOE Department of Energy 2016