

# Komondoor V Raghavan

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## *Research Interests*

I work in the areas of programming languages, and formal methods in software engineering. I am interested in developing automated, semantics-based, analysis and transformation techniques and tools to improve productivity, correctness, and agility of software development and maintenance. Most of my research is centered around static analysis of programs, as well as analysis and verification of formally specified requirements and designs.

## *Education*

### **PhD in Computer Sciences**

**Univ. of Wisconsin-Madison.**

Thesis: Identifying and eliminating duplication in source code.

Adviser: Prof. Susan Horwitz.

GPA: 3.85 / 4

Date: Aug. '03

### **Master of Technology in Computer Sciences**

**Indian Institute of Technology, Bombay, India.**

Thesis: System for automatically generating code optimizers.

Adviser: Prof. D. M. Dhamdhere.

Avg. Grade: 9.76 / 10

Date: Jan '96

### **Bachelor of Engineering in Computer Sciences**

**Government College of Tech., Coimbatore, India.**

Thesis: Implementation of a run-time debugger.

Avg. Marks: 85%

Date: May '94

## *Work and Research Experience*

- Assistant Professor at *Indian Institute of Science, Bangalore* (Aug. '08 to present).
- Research Staff Member at *IBM India Research Lab, New Delhi* (Oct. '05 - Jul. '08).
- Postdoc Researcher at *IBM T. J. Watson Research Center*, with Advanced Programming Tools group (Dr. John Field) (Sep. '03 - Sep. '05).
- Summer Intern at *IBM T. J. Watson Research Center*, with Advanced Programming Tools group (June - Aug. '02).
- Summer student at *IBM Toronto Lab* (Sep. - Dec. '00, June - Aug. '01).
- Summer Intern at *Lucent Bell Labs*, with Databases group (Dr. Rajeev Rastogi) (June - Aug. '98).
- Project Engineer at *Indian Institute of Technology, Bombay*, with Prof. S. Sudarshan (Jan '96 - July '97).

## Activities and Honors

- Program committee membership
  - 6th Asian Symp. on Programming Langs. and Systems (APLAS '08)
  - ACM Symp. on Applied Computing (SAC) Programming Languages Track: 2009, 2010, and 2011.
  - India Software Engineering Conference (ISEC): 2010, 2011, and 2012
  - 27th IEEE International Conference on Software Maintenance (ICSM) 2011
- IBM Faculty Award (2008), Microsoft Research India grant (2009)
- IBM PhD Fellowship (2002), and IBM CAS Fellowship (2000-2001).
- Reviewed papers for IEEE Transactions on Software Engineering, IEEE Software, and for Formal Aspects of Computing.  
Co-reviewed papers for IBM CASCON '00 Conference, SPIN '03 Workshop on Model Checking of Softw., ACM Symp. on Principles of Prog. Langs. (POPL) '05, European Symp. on Prog. (ESOP) '05, Static Analysis Symposium (SAS) '05, POPL '06, ACM Workshop on Partial Evaluation and Program Manipulation (PEPM) '06, SAS '06, POPL '11.
- Helped write Instructors Manual for “Database System Concepts”, 3rd Edition, McGraw-Hill, by Silberschatz, Korth, and Sudarshan.

## Publications

### *Refereed conference publications*

1. Ravichandhran Madhavan and Raghavan Komondoor. Null dereference verification via over-approximated weakest pre-conditions analysis. To appear in *Proc. ACM Symposium on Object Oriented Programming Systems, Languages, and Applications (OOPLSA)*, October 2011. *Acceptance rate: 36%*.
2. H. S. Gupta, D. D'Souza, R. Komondoor, and G. M. Rama. A case study in matching service descriptions to implementations in an existing system. In *Proc. 26th IEEE Intl. Conf. on Softw. Maintenance (ICSM)*, September 2010. *Acceptance rate: 27%*.
3. R. Komondoor, and G. Ramalingam. Recovering Data Models via Guarded Dependences. In *Proc. 14th Working Conf. on Reverse Engg. (WCRE)*, October 2007, pages 110–119. *Acceptance rate: 31%*.
4. S. Sinha, G. Ramalingam, and R. Komondoor. Parametric Process Model Inference. In *Proc. 14th Working Conf. on Reverse Engg. (WCRE)*, October 2007, pages 21–30. *Acceptance rate: 31%*.
5. G. Ramalingam, R. Komondoor, J. Field, and S. Sinha. Semantics-based Reverse Engineering of Object-Oriented Data Models. In *Proc. 28th International Conference on Software Engineering (ICSE)*, May 2006, pages 192–201. *Acceptance rate: 9%*.
6. R. Komondoor, G. Ramalingam, S. Chandra, and J. Field. Dependent Types for Program Understanding. To appear in *Proc. 11th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, Apr. 2005, pages 157–173. *Acceptance rate: 24%*.
7. R. Komondoor and S. Horwitz. Effective, Automatic Procedure Extraction. In *Proc. 11th International Workshop on Program Comprehension (IWPC)*, pages 33-43, May 2003.

8. R. Komondoor and S. Horwitz. Using Slicing to Identify Duplication in Source Code. In *Proc. Int. Symposium on Static Analysis (SAS)*, pages 40-56, July 2001. *Acceptance rate: 34%*.
9. R. Komondoor and S. Horwitz. Semantics-Preserving Procedure Extraction. In *Proc. ACM Symposium on Principles of Programming Languages (POPL)*, pages 155-169, Jan. 2000. *Acceptance rate: 20%*.
10. Y. Breitbart, R. Komondoor, R. Rastogi, S. Seshadri, and A. Silberschatz. Update Propagation Protocols for Replicated Databases. In *Proc. ACM SIGMOD International Conference on Management of Data*, pages 97-108, June 1999. *Acceptance rate: 20%*.

*Refereed journal publications*

1. S. Chandra, J. de Vries, J. Field, H. Hess, M. Kalidasan, K. V. Raghavan, F. Nieuwerth, G. Ramalingam, and J. Xue. Technical Forum Article: Using logical data models for understanding and transforming legacy business applications. *IBM Systems Journal*, 45(3):647-655, 2006.

*Other publications*

1. R. Komondoor and S. Horwitz. Eliminating Duplication in Source Code via Procedure Extraction. Univ. of Wisconsin-Madison Computer Sciences Tech. Report #1461, Dec. 2002.
2. R. Komondoor and S. Horwitz. Tool Demonstration: Finding Duplicated Code Using Program Dependences. In *Proc. European Symposium on Programming Languages (ESOP)*, pages 383-386, Apr. 2001.

(Copies of my papers are available at <http://www.csa.iisc.ernet.in/~raghavan>)

*Patents*

1. S. Chandra, J. Field, R. Komondoor, G. Ramalingam, and S. Sinha. System and Method for a Logical-Model based Application Understanding and Transformation. *Applied for US Patent 2006*.
2. Y. Breitbart, R. Komondoor, R. Rastogi, S. Seshadri, and A. Silberschatz. Timestamp-based System and Method for Serializing Updates in a Distributed Database. *Granted US Patent #6,381,609, 2002*.