

# Kostadin Damevski

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## Personal Information

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## Education

Ph.D.	2006	University of Utah	Computer Science
M.S.	2002	University of Utah	Computer Science
B.S.	2000	University of Central Oklahoma	Computer Science

## Professional Employment

Date	Position	Institution
August 2015 to <i>present</i>	Assistant Professor	Virginia Commonwealth University
May 2015 to August 2015 & May 2014 to August 2014	Research Consultant	ABB Corporate Research
August 2013 to May 2015	Associate Professor	Virginia State University
August 2008 to May 2013	Assistant Professor	Virginia State University
August 2006 to August 2008	Postdoctoral Research Associate	SCI Institute, University of Utah

## Publications

Graduate student<sup>Ⓔ</sup> and undergraduate student<sup>Ⓐ</sup> authors in Damevski's Lab are noted.

## Refereed Journals (15)

- [1] M.A. Nishi<sup>Ⓔ</sup>, K. Damevski. "Scalable Code Clone Detection and Search based on Adaptive Prefix Filtering". *Journal of Systems and Software*. vol.137, pp.130-142, 2017.
- [2] K. Damevski, H. Chen, D.C. Shepherd, N.A. Kraft, L. Pollock. "Predicting Future Developer Behavior in the IDE Using Topic Models". *IEEE Transactions on Software Engineering*. 2017. *selected for presentation at the main track of International Conference of Software Engineering (ICSE'18) as a journal-first paper*
- [3] J. Schneider, A. Bernstein, J. vom Brocke, K. Damevski, D. C. Shepherd. "Detecting Plagiarism based on the Creation Process". *IEEE Transactions on Learning Technologies*. 2017.
- [4] S.M. Naim, K. Damevski, M.S. Hossain. "Reconstructing and Evolving Software Architectures Using a Coordinated Clustering Framework". *Journal of Automated Software Engineering*. vol.24(3), pp.543-572, 2017.
- [5] K. Damevski, D. Shepherd, J. Schneider, L. Pollock. "Mining Sequences of Developer Interactions in Visual Studio for Usage Smells", *IEEE Transactions on Software Engineering*. vol.43(4), pp.359-371, 2016. *selected for presentation at the main track of International Conference of Software Engineering (ICSE'17) as a journal-first paper*
- [6] X. Ge, D. Shepherd, K. Damevski, E. Murphy-Hill. "Design and Evaluation of a Multi-Recommendation System for Local Code Search". *Journal of Visual Languages and Computing*. 2016.
- [7] J-S. Lee, K. Damevski, H. Chen. "Exploring Computer Science Students Learning of Sensor-Driven Mobile App Design: A Case Study". *International Journal of Teaching and Case Studies*. vol.7(3-4), pp.187-206, 2016.
- [8] K. Damevski, D. Shepherd, L. Pollock. "A Field Study of How Developers Locate Features in Source Code", *Journal of Empirical Software Engineering*, vol.21, pp.724-747, 2015. *selected for presentation at the main track of International Conference of Software Engineering (ICSE'16) as a journal-first paper*
- [9] J. Wang, K. Damevski, H. Chen. "Sensor Data Modeling and Validating for Wireless Soil Sensor Networks", *Journal of Computers and Electronics in Agriculture*, vol.112, pp.75-82, 2015.
- [10] B. Altayeb<sup>Ⓔ</sup>, K. Damevski. "Utilizing and Enhancing Software Modeling Environments to Teach Mobile Application Design", *Journal of Computing Sciences in Colleges*, vol.28(6), pp.57-64, 2013.
- [11] H. Chen, K. Damevski, W. Edwards<sup>Ⓔ</sup>. "Infusing Cyber-Physical Systems Concepts into Introductory Computer Science Courses", *Journal of Computing Sciences in Colleges*, vol.28(6), pp.26-34, 2013.
- [12] K. Damevski, "Offline Contract Enforcement for High Performance Computing", *Journal of Concurrency and Computation: Practice and Experience*, vol.23(13), pp.1465-1473, 2010.

- [13] F. Bertrand, R. Bramley, D. Bernholdt, J. Kohl, J. Larson, A. Sussman and K. Damevski, "Data Redistribution and Remote Method Invocation for Coupled Components", *Journal of Parallel and Distributed Computing*, vol.66(7), pp.931-946, 2006.
- [14] Benjamin A. Allan, Robert Armstrong, David E. Bernholdt, Felipe Bertrand, Kenneth Chiu, Tamara L. Dahlgren, Kostadin Damevski, Wael R. Elwasif, Thomas G. W. Epperly, Madhusudhan Govindaraju, Daniel S. Katz, James A. Kohl, M anoj Krishnan, Gary Kumfert, J. Walter Larson, Sophia Lefantzi, Michael J. Lewis, Allen D. Malony, Lois C. McInnes, Jarek Nieplocha, Boyana Norris, Steven G. Parker, Jaideep Ray, Sameer Shende, Therisa L. Windus, and Shujia Zhou, "A Component Architecture for High Performance Scientific Computing" *International Journal of High-Performance Computing Applications*, vol.20(2), pp.163-202, 2006.
- [15] K. Damevski and S. Parker. "M-by-N Data Redistribution through Parallel Remote Method Invocation". *International Journal of High-Performance Computing Applications*, vol.19(4), pp.389-399, 2005.

### Refereed Conferences (22)

- [1] Z. Coker, K. Damevski, C. Le Goues, N. A. Kraft, D. Shepherd, L. Pollock. "Behavior Metrics for Prioritizing Investigations of Exceptions". In Proceedings of the IEEE International Conference on Software Maintenance and Evolution (ICSME 2017) – Industry Track, Shanghai, China. (Acceptance Rate = 35%)
- [2] P. Chatterjee, M.A. Nishi<sup>®</sup>, K. Damevski, V. Augustine, L. Pollock, N. Kraft. "What Information about Code Snippets Is Available in Different Software-Related Documents? An Exploratory Study". In Proceedings of the 24th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2017) – Early Research Achievements (ERA) Track, Klagenfurt, Austria. (Acceptance Rate = 32.5%)
- [3] K. Damevski, H. Chen, D. Shepherd, L. Pollock. "Interactive Exploration of Developer Interaction Traces using a Hidden Markov Model". *Proceedings of the 13th International Conference on Mining Software Repositories (MSR'16)*, Austin, TX. (Acceptance Rate = 27%)
- [4] C. Corley, K. Damevski, N. Kraft. "Exploring the Use of Deep Learning for Feature Location". *Proceedings of the International Conference on Software Maintenance and Evolution (ICSME 2015) Early Research Achievements (ERA) Track*, Bremen, Germany. (Acceptance Rate = 35%)
- [5] D. Shepherd, K. Damevski, L. Pollock, "How and When to Transfer Software Engineering Research via Extensions". *Proceedings of the International Conference on Software Engineering (ICSE 2015) – Software Engineering in Practice (SEIP) Track*, Florence, Italy. (Acceptance Rate = 50%).
- [6] K. Damevski, D. Shepherd, L. Pollock. "Scaling up Evaluation of Code Search Tools through Developer Usage Metrics". *Proceedings of the 22nd IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2015)*, Montreal, Canada. (Acceptance Rate = 27%).
- [7] X. Ge, D. Shepherd, K. Damevski, E. Murphy-Hill. "How Developers Use Multi-Recommendation System in Local Code Search". *Proceedings of the IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2014)*, Melbourne, Australia. (Acceptance Rate = 30%). **Best Long Paper Award**

- [8] H. Chen, K. Damevski. "A Teaching Model for Development of Sensor-Driven Mobile Applications". *Proceedings of the ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE 2014)*, Uppsala, Sweden, 2014. (Acceptance Rate = 35%)
- [9] K. Damevski, D. Shepherd, L. Pollock. "A Case Study of Paired Interleaving for Evaluating Code Search Techniques". *Proceedings of the IEEE Conference on Software Maintenance and Reengineering and Working Conference on Reverse Engineering (CSMR-WCRE 2014)*, Antwerp, Belgium, 2014. (Acceptance Rate = 31%)
- [10] X. Ge, D. Shepherd, K. Damevski, E. Murphy-Hill. "How the Sando Search Tool Recommends Queries", *Proceedings of the IEEE Conference on Software Maintenance and Reengineering - Working Conference on Reverse Engineering (CSMR-WCRE 2014), Tool Demonstration Track*, Antwerp, Belgium, 2014. (Acceptance Rate = 50%)
- [11] K. Damevski, B. Altayeb<sup>Ⓔ</sup>, H. Chen, D. Walter. "Teaching Cyber-Physical Systems to Computer Scientists via Modeling and Verification". *Proceeding of 44th Annual SIGCSE Technical Symposium on Computer Science Education (SIGCSE 2013)*, Denver, CO, 2013. (Acceptance Rate = 37.8%)
- [12] D. Shepherd, K. Damevski, B. Ropski, T. Fritz. "Sando: An Extensible Local Code Search Framework". *Proceedings of the 20th International Symposium on the Foundations of Software Engineering (FSE 2012), Tool Demonstration Track*, Raleigh, North Carolina, 2012.
- [13] J. Wang, K. Damevski, H. Chen. "Model Refinement and Data Filtering in High-Tunnel Greenhouse Sensor Network" *Proceedings of 7th ACM International Symposium on QoS and Security for Wireless and Mobile Networks (Q2SWINET 2011)*, Miami Beach, Florida, 2011.
- [14] J. Wang, H. Chen, K. Damevski, J. Liu, "Mobility-tolerant, Efficient Multicast in Mobile Cloud Applications," *Proceedings of the 4th International ICST Conference on Mobile Wireless Middleware, Operating Systems, and Applications (MOBILWARE 2011)*, London, UK, 2011.
- [15] K. Damevski, H. Chen. "Automated Provenance Collection for CCA Component Assemblies". *Proceedings of the 9th International Conference on Computational Science (ICCS 2009) (main track)*, Baton Rouge, Louisiana, 2009.
- [16] S. Yau, K. Damevski, V. Karamcheti, S. Parker, D. Zorin. "Application-Aware Management of Parallel Simulation Collections". *Proceedings of the 14th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPOPP 2009)*, Raleigh, North Carolina, 2009.
- [17] S. Yau, K. Damevski, D. Zorin, V. Karamcheti, S. Parker. "Result Reuse in Design Space Exploration: A Study in System Support for Interactive Parallel Computing". *Proceedings of the 22 International Parallel and Distributed Processing Symposium (IPDPS 2008)*, Miami, Florida, 2008.
- [18] K. Damevski, A. Swaminathan, S. Parker. "Highly Scalable Distributed Component Framework for Scientific Computing". *Proceedings of the 3rd International Conference on High Performance Computing and Communication (HPCC 2007)*, Houston, Texas, 2007.
- [19] K. Damevski, A. Swaminathan, S. Parker. "CCALoop: Scalable Design of a Distributed Component Framework". *Proceedings of the 16th IEEE International Symposium on High Performance Distributed Computing (HPDC 2007) (Short Paper)*, Monterey, California, 2007.

- [20] F. Bertrand, R. Bramley, K. Damevski, D. Bernholdt, J. Kohl, J. Larson and A. Sussman “Data Redistribution and Remote Method Invocation in Parallel Component Architectures”. *Proceedings of the 19th International Parallel and Distributed Processing Symposium (IPDPS 2005)*, Denver, Colorado, 2005. **Best Paper Award**
- [21] K. Damevski and S. Parker. ”Imprecise Exceptions in Distributed Parallel Components”. *Proceedings of the 9th European Conference on Parallel Computing (EURO-PAR 2004)*, Piza, Italy, 2004.
- [22] K. Damevski, and S. Parker. “Parallel Remote Method Invocation and M-by-N Data Redistribution”. *Proceedings of the 4th Los Alamos Computer Science Institute Symposium (LACSI 2003)*, Santa Fe, New Mexico, 2003.

### Refereed Workshops (10)

- [1] K. Damevski, D. Shepherd, N. Kraft, L. Pollock. “Supporting Developers in Porting Software via Combined Textual and Structural Analysis of Software Artifacts”. Computational Science and Engineering Software Sustainability and Productivity Challenges (CSESSP Challenges) - Position Paper, Rockville, MD, 2015.
- [2] K. Damevski, D. Shepherd, L. Pollock. “An Implicit Feedback-based Approach to the Evaluation of Text Analysis Techniques for Software Engineering”. *Proceedings of the 1st International Workshop on on the Next Five Years of Text Analysis in Software Maintenance (TAinSM2012)*, Riva de Garda, Italy, 2012.
- [3] K. Damevski, M. Muralimanohar<sup>®</sup>. “A Refactoring Tool to Extract GPU Kernels”. *Proceedings of the 2011 Workshop on Refactoring Tools (WRT 2011)*, in conjunction with the International Conference on Software Engineering (ICSE 2011), Honolulu, Hawaii, 2011.
- [4] K. Damevski, T. Dahlgren. “Parallel Object Contracts for High Performance Computing”. *Proceedings of the 2011 Workshop on High-Level Programming Models and Supportive Environments (HIPS 2011)*, in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS 2011), Anchorage, Alaska, 2011.
- [5] K. Damevski. “Expressing Measurement Units in Interfaces for Scientific Component Software”. *Proceedings of the 2009 Workshop on Component-Based High Performance Computing, in conjunction with the 22nd Supercomputing Conference (SC09)*, Portland, Oregon, 2009.
- [6] K. Damevski, H. Chen, T. Dahlgren. “Reducing Component Contract Overhead by Offloading Enforcement”. *Proceedings of the 2009 Workshop on Component-Based High Performance Computing, in conjunction with the 22nd Supercomputing Conference (SC09)*, Portland, Oregon, 2009.
- [7] K. Damevski, A. Khan, S. Parker. “Scientific Workflows and Components: Together at Last”. *Proceedings of 3rd Workshop on Component-Based High Performance Computing (CBHPC 2008)*, Karlsruhe, Germany, 2008.
- [8] K. Damevski, K. Zhang, S. Parker. “Practical Parallel Remote Method Invocation for the Babel Compiler”. *Proceedings of the joint HPC-GECCO/CompFrame Workshop*, Montreal, Canada, 2007
- [9] K. Damevski. “Generating Bridges Between Heterogeneous Component Models”. *Proceedings of the 7th Generative Programming and Component Engineering (GPCE) Young Researchers Workshop*, Talinn, Estonia, 2005.

- [10] K. Damevski, K. Damevski, V. Venkatachalapathy, and S. Parker. “SCIRun2: A CCA Framework for High Performance Computing”. *Proceedings of the 9th International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS 2004)*, 2004.

### Book Chapters (4)

- [1] Will Snipes, Emerson Murphy-Hill, Thomas Fritz, Mohsen Vakilian Kostadin Damevski, Anil R. Nair, David Shepherd. *A Practical Guide to Analyzing IDE Usage Data*. The Art and Science of Analyzing Software Data. To Appear
- [2] Kostadin Damevski. *Tool Support for Efficient Programming of Graphics Processing Units*. Bridging Mathematics, Statistics, Engineering and Technology. Edited by Bourama Toni, Keith Williamson, Nasser Ghariban, Dawit Haile, and Zhifu Xie. Springer Proceedings in Mathematics and Statistics 24.
- [3] Steven G. Parker, Kostadin Damevski, Ayla Khan, Ashwin Swaminathan, Chris R. Johnson. *The SCIJump Framework for Parallel and Distributed Scientific Computing*. In Advanced Computational Infrastructures for Parallel/Distributed Adaptive Applications. Edited by Manish Parashar, Xiaolin Li, and Sumir Chandra, Wiley Press, 2007
- [4] Steven G. Parker, Keming Zhang, Kostadin Damevski, and Chris R. Johnson. *Integrating Component-Based Scientific Computing Software*. In *Parallel Processing For Scientific Computing*. SIAM book series in Software, Environments, and Tools 2005. Edited by Michael A. Heroux, Padma Raghavan, and Horst D. Simon

### Thesis

- K. Damevski. “Component Model Interoperability for Scientific Computing” , *PhD Thesis*, University of Utah, 2006.
- K. Damevski. “Parallel Component Interaction using an IDL Compiler” , *MS Thesis*, University of Utah, 2002.

### Courses Taught

#### At Virginia Commonwealth University

- *Introduction to Software Analysis, Testing and Verification* – Spring 2017, 2018
- *Software Engineering* – Fall 2015, 2016, 2017

#### At Virginia State University

- *Software Engineering (graduate & undergraduate)* – Fall 2009,2010,2011,2013, Spring 2014
- *Senior Project* – Fall 2011,2012, Spring 2013,2014,2015
- *Introduction to Computer Science* – Fall 2008,2009,2010, Spring 2009,2010
- *Embedded Systems (graduate & undergraduate)* – Spring 2009,2010,2011, Fall 2012
- *Operating Systems* – Spring 2008, 2013, 2014
- *Parallel Algorithms* – Fall 2010, 2012, 2014
- *Object Oriented Programming* – Spring 2009,2010
- *Advanced Algorithms and Data Structures* – Fall 2011
- *Computer Graphics* – Spring 2011
- *Data Structures* – Spring 2013, 2014
- *Introduction to Programming in C++* – Fall 2009
- *Introduction to Problem Solving using Computers* – Fall 2008
- *Introduction to Programming for Chemical and Life Science Engineers* – Fall 2007

### Research Grants and Contracts

#### Current Support

Supporting Agency: DARPA  
 Total Costs: \$100,000 (VCU share)  
 Title of Project: Mining Developer Communications to Create a Web-Scale Repository of Documented and Analyzable Snippets  
 Duration: 14 months  
 Start Date: 01/01/2017  
 Principal Investigators: **Kostadin Damevski (Institutional PI)** (with ABB, Inc. and University of Delaware)

#### Past Support

Supporting Agency: ABB, Inc.  
 Total Costs: \$25,000  
 Title of Project: Mining ABB RobotStudio's Field Usage Data  
 Duration: 12 months  
 Start Date: 02/01/2016  
 Principal Investigators: **Kostadin Damevski (PI)**

Supporting Agency: Google, Inc.  
Total Costs: \$35,000  
Title of Project: CS4HS: Launching CS Principles in Southside and Central Virginias  
Resource Constrained School Districts  
Duration: 12 months  
Start Date: 05/01/2016  
Principal Investigators: **Kostadin Damevski (PI)**

#### **Past Support at Virginia State University**

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Supporting Agency: Commonwealth Center for Advanced Manufacturing  
Total Costs: \$140,000  
Title of Project: G010 – Automated Defect Detection in Radiography  
Duration: 6 months  
Start Date: 04/21/2014  
Principal Investigators: Dawit Haile (PI), Hui Chen (Co-PI), Wei-Bang Chen (Co-PI),  
Pallant Ramsundar (Co-PI), **Kostadin Damevski (Co-PI)**

Supporting Agency: Google, Inc.  
Total Costs: \$10,000  
Title of Project: CS4HS: Teaching Computer Science using the Android Platform  
Duration: 1 year  
Start Date: 03/12/2013  
Principal Investigators: David Walter (PI), **Kostadin Damevski (Co-PI)**, Hui Chen (Co-PI),

Supporting Agency: National Science Foundation  
Total Costs: \$230,662  
Title of Project: MRI: Acquisition of Sensing and Computing Equipment for Smart High-Tunnel Greenhouses  
Duration: 4 years  
Start Date: 09/15/2010  
Principal Investigators: Hui Chen (PI), **Kostadin Damevski (Co-PI)**, Ju Wang (Co-PI),  
Ahmad Rafie (Co-PI), and Christopher Mullins (Co-PI)

Supporting Agency: National Science Foundation  
Total Costs: \$199,231  
Title of Project: TUES: Longevity-Oriented Curriculum Enhancement for Cyber-Physical Systems  
Duration: 3 years  
Start Date: 10/01/2011  
Principal Investigators: Hui Chen (PI), **Kostadin Damevski (Co-PI)**, Ju Wang (Co-PI),  
David Walter (Co-PI))



Supporting Agency: Department of Energy  
 Total Costs: \$322,936 (VSU share)  
 Title of Project: Center for Technology for Advanced Scientific Component Software (TASCS)  
 Start Date: 05/15/2010 – 05/15/2012  
 Principal Investigators: **Kostadin Damevski (Institutional PI)** (with 4 other universities, 5 national labs, and a private company)

Supporting Agency: NASA / Thurgood Marshall College Fund  
 Total Costs: \$130,000  
 Title of Project: Developing High-Level Programming Abstractions for Hybrid Hardware Platforms  
 Dates: 09/01/2010 – 09/01/2011  
 Principal Investigators: **Kostadin Damevski (PI)**

### Doctoral Students, Thesis Advisor

- Manziba Akanda Nishi, *in progress, since Spring 2016*

### Masters Students, Thesis Advisor

- Chase Greco, *in progress, since Summer 2017*
- John Coogle, *in progress, since Summer 2017*

### At Virginia State University

- Marco Peterson, “Metamorphic Testing of Android Apps”. M.S. Thesis Advisor, Summer 2015.
- Sudip Chakravorthy, “Automatic Generation of Human Readable Text Summaries Of C# Source Code in Natural Language”. M.S. Thesis Advisor, Spring 2014.
- Badreldin Altayeb, “Introducing Cyber-Physical Systems to CS Majors Using Modeling”. M.S. Thesis Advisor, Spring 2013.
- Benjamin Brown, “Characterization of Plants using Wireless Network Signal Strenght”. M.S. Thesis Advisor, Summer 2012.
- Alkema Woods, “Trojan SmartFarm: Utilizing Sensing Capabilities of Smart Phones to Enhance Yield of High Value Crops”. M.S. Thesis Advisor, Fall 2011
- Madhan Muralimanohar, “Static GPU Profitability Analysis of Loop Nests”. M.S. Thesis Advisor, Fall 2011
- Ayodele Ogunnika, “An Evaluation of Gaussian Models for Data Acquisition in Sensor Networks”. M.S. Thesis Advisor, Summer 2011

- Ashwin Swaminathan, “CCALoop - A Scalable Distributed Component Framework for Scientific Computing”. MS Thesis Mentor, University of Utah, School of Computing, 2007

### *Undergraduate Students, Research Advisor*

- Tyler Haden, *in progress, since Summer 2017*

### *Professional Service*

- International Workshop on Mining and Analyzing Interaction Histories (MAINT)  
— PC Member (2017)
- IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)  
— PC Member (2017)
- Journal of Systems and Software  
— Reviewer (2017)
- International Conference on Software Maintenance and Evolution (ICSME)  
— PC Member, Artifacts Track (2017)  
— Reviewer (2017)
- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM)  
— Web Chair (2016)
- Commonwealth Center for Advanced Manufacturing  
— Technical Advisory Group Member (2015)
- IEEE Transactions on Software Engineering  
— Reviewer (2014,2016)
- ACM Transactions on Software Engineering and Methodology  
— Reviewer (2015,2016)
- European Conference on Software Maintenance and Reengineering – Working Conference on Reverse Engineering (CSMR-WCRE)  
— Program Committee Member, Tool Demonstrations Track (2014)
- International Workshop on Sensor Networks  
— Technical Program Committee Member (2012, 2013)

- Workshop on Component-Based High Performance Computing
  - Technical Program Committee Member (2009, 2010)
- DOE Proposal Reviewer (2010)
- NSF Panelist (2010)
- Common Component Architecture (CCA) Forum
  - Voting Member (2002–2010)
  - Event Service Specification Committee Chair (2008–2010)