

Denys Poshyvanyk

Computer Science Department
The College of William and Mary
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Research Interests

Software engineering, software evolution and maintenance, program comprehension, reverse engineering, software repository mining, applications of information retrieval and of static and dynamic program analysis in software engineering

Professional Experience

Assistant Professor in the Computer Science Department, The College of William and Mary, August 2008 – present

Graduate Research and Teaching Assistant, The Department of Computer Science, Wayne State University, Detroit, MI, Fall 2003 – July 2008

Instructor, The Department of Computer Science, Wayne State University, Detroit, MI; May 2004 – August 2004

Software Developer, Software Macintosh Kiev (SMK), Kiev, Ukraine; May 2002 – May 2003

Education

Doctor of Philosophy in Computer Science (Fall 2003 – April 2008)

Wayne State University, Detroit, USA

Advisor: Dr. Andrian Marcus

Dissertation title: *Using Information Retrieval to Support Software Maintenance Tasks*

Dissertation Committee: Daniel Grosu, Jonathan Maletic, Andrian Marcus, and Václav Rajlich

Master of Arts in Computer Science (2003-2006)

Wayne State University, Detroit, USA - GPA: 3.87/4.00

Master of Science (*with honors*) in Computer Science (2001-2003)

The National University of "Kyiv-Mohyla Academy", Kiev, Ukraine - GPA: 97.4/100

Bachelor of Science (*with honors*) in Information Systems (1996-2001)

The National University at Kharkov, Ukraine - GPA: 5.00/5.00

Honors and Awards

Michael E. Conrad Outstanding Graduate Research Publication Award,

by the Department of Computer Science, Wayne State University 2008

Best Paper Award at the 15th IEEE Int. Conference on Program Comprehension (ICPC) 2007

Graduate Research Assistant Recognition Award,

by the Graduate School, Wayne State University 2006

Best Paper Award at the 14th IEEE Int. Conference on Program Comprehension (ICPC) 2006

Microsoft Student Ambassador **Award for Outstanding Academic Developers** 2005

Graduate Recognition Award for **Exceptional Teaching Service,**

by the College of Liberal Arts and Sciences, Wayne State University 2005

Refereed Journal Articles

[J4] Poshyvanyk, D., Marcus, A., Ferenc, R., Gyimóthy, T. "Using Information Retrieval based Coupling Measures for Impact Analysis", *Empirical Software Engineering, An International Journal*, vol. 14, no. 1, February 2009, pp. 5-32.

[J3] Marcus, A., Poshyvanyk, D., and Ferenc, R., "Using the Conceptual Cohesion of Classes for Fault Prediction in Object Oriented Systems", *IEEE Transactions on Software Engineering*, vol. 34, no. 2, March/April 2008, pp. 287-300.

[J2] Petrenko, M., Poshyvanyk, D., Rajlich, V., Buchta, J., "Teaching Software Evolution in Open Source", *IEEE Computer*, November 2007, pp. 25-31.

[J1] Poshyvanyk, D., Guéhéneuc, Y. G., Marcus, A., Antoniol, G., Rajlich, V., "Feature Identification using Probabilistic Ranking of Methods based on Execution Scenarios and Information Retrieval", *IEEE Transactions on Software Engineering*, vol. 33, no. 6, June 2007, pp. 420-432.

Refereed Conference Publications

[C20] Liu, Y., Poshyvanyk, D., Ferenc, R., Gyimóthy, T., and Chrisochoides, N., "Modelling Class Cohesion as Mixtures of Latent Topics", in *Proceedings of the 25th IEEE International Conference on Software Maintenance (ICSM'09)*, Edmonton, Alberta, Canada, September 20-26, 2009, pp. 233-242.

Acceptance ratio: 22%

[C19] Poshyvanyk, D., "Using Information Retrieval to Support Software Maintenance Tasks", in *Proceedings of the 25th IEEE International Conference on Software Maintenance (ICSM'09)*, Doctoral Symposium Track, Edmonton, Alberta, Canada, September 20-26, 2009, pp. 453-456.

[C18] Tian, K., Revelle, M., and Poshyvanyk, D., "Using Latent Dirichlet Allocation for Automatic Categorization of Software", in *Proceedings of the 6th IEEE Working Conference on Mining Software Repositories (MSR'09)*, Vancouver, B.C., Canada, May 16-17, 2009, pp. 163-166.

Acceptance ratio: 40%

[C17] Revelle, M., Poshyvanyk, D., "An Exploratory Study on Assessing Feature Location Techniques", in *Proceedings of the 17th IEEE International Conference on Program Comprehension (ICPC'09)*, Vancouver, British Columbia, Canada, May 17-19, 2009, pp. 218-222.

Acceptance ratio: 48%

[C16] Kagdi, H., Poshyvanyk, D., "Who Can Help Me with this Change Request?", in *Proceedings of the 17th IEEE International Conference on Program Comprehension (ICPC'09)*, Vancouver, British Columbia, Canada, 2009, pp. 273-277.

Acceptance ratio: 48%

[C15] Pierret, D., Poshyvanyk, D., "An Empirical Exploration of Regularities in Open-Source Software Lexicons", in *Proceedings of the 17th IEEE International Conference on Program Comprehension (ICPC'09)*, Vancouver, British Columbia, Canada, 2009, pp. 228-232.

Acceptance ratio: 48%

[C14] Poshyvanyk, D., Grechanik, M. "Creating and Evolving Software by Searching, Selecting and Synthesizing Relevant Source Code ", in *Proceedings of the 31st IEEE/ACM International Conference on Software Engineering (ICSE2009), New Ideas and Emerging Results*, Vancouver, Canada, May 16-24, 2009, pp. 283-286.

Acceptance ratio: 18%

[C13] Liu, D., Marcus, A., Poshyvanyk, D., Rajlich, V., "Feature Location via Information Retrieval based Filtering of a Single Scenario Execution Trace", in the *Proceedings of the 22nd IEEE/ACM International Conference on Automated Software Engineering (ASE2007)*, Atlanta, Georgia, November 5-9, 2007, pp. 234-243.

Acceptance ratio: 12%

[C12] Poshyvanyk, D., Marcus, A., "Using Information Retrieval to Support Design of Incremental Change of Software", in the *Proceedings of the 22nd IEEE/ACM International Conference on Automated Software Engineering (ASE2007), Doctoral Symposium*, Atlanta, Georgia, November 5-9, 2007, pp. 563-566.

[C11] Poshyvanyk, D., Marcus, A., "Combining Formal Concept Analysis with Information Retrieval for Concept Location in Source code", in the *Proceedings of the 15th IEEE International Conf. on Program Comprehension (ICPC2007)*, Banff, Alberta, Canada, June 26-29, 2007, pp. 37-48.

Acceptance ratio: 33%

This paper won the **Best Paper Award**

[C10] Xie, X., Poshyvanyk, D., Marcus, A., "Visualization of CVS Repository Information", in the *Proceedings of the 13th IEEE Working Conference on Reverse Engineering (WCRE2006)*, Benevento, Italy, October 23-27, 2006, pp. 231-242.

Acceptance ratio: 29%

[C9] Poshyvanyk, D., Marcus, A., "The Conceptual Coupling Metrics for Object-Oriented Systems", in the *Proceedings of the 22nd IEEE International Conference on Software Maintenance (ICSM2006)*, Philadelphia, PA, September 25-27, 2006, pp. 469-478.

Acceptance ratio: 28%

[C8] Poshyvanyk, D., Petrenko, M., Marcus, A., Xie, X., Liu, D., "Source Code Exploration with Google", in the *Proceedings of the 22nd IEEE International Conference on Software Maintenance (ICSM2006)*, Philadelphia, PA, September 25-27, 2006, pp. 334-338.

Acceptance ratio: 30%

[C7] Buchta, J., Petrenko, M., **Poshyvanyk, D.**, Rajlich, V., "Teaching Evolution of Open Source Projects in Software Engineering Courses", in the *Proceedings of the 22nd IEEE International Conference on Software Maintenance (ICSM2006)*, Philadelphia, PA, Sept. 25-27, 2006, pp. 136-144.

Acceptance ratio: 28%

[C6] Marcus, A., De Lucia, A., Jane Huffman Hayes, Poshyvanyk, D., "Information Retrieval Based Approaches in Software Evolution", in the *Proceedings of the 22nd IEEE International Conference on Software Maintenance (ICSM2006), Working Session*, Philadelphia, PA, Sept. 25-27, 2006, pp. 197-199.

[C5] Poshyvanyk, D., Guéhéneuc, Y., Marcus, A., Antoniol, G., Rajlich, V., "Combining Dynamic and Information Retrieval Approaches for Feature Location in the Source Code", in the *Proceedings of the 14th IEEE International Conference on Program Comprehension (ICPC2006)*, Athens, Greece, June 14-16, 2006, pp. 137-148.

Acceptance ratio: 36%

This paper won the **Best Paper Award**

[C4] Poshyvanyk, D., Marcus, Dong, Y., "JIRiSS - an Eclipse plug-in for Source Code Exploration", in the *Proceedings of the 14th IEEE International Conference on Program Comprehension (ICPC2006), Research Demonstration*, Athens, Greece, June 14-16, 2006, pp. 252-255.

[C3] Xie, X., Poshyvanyk, D., and Marcus, A., "3D Visualization for Concept Location in Source Code", in the *Proceedings of the 28th IEEE/ACM International Conference on Software Engineering (ICSE2006)*, Research Demonstration, Shanghai, China, May 20-28, 2006, pp. 839-842.

Acceptance ratio: 45%

[C2] Marcus, A., Poshyvanyk, D., "The Conceptual Cohesion of Classes" in the *Proceedings of the 21st IEEE International Conference on Software Maintenance (ICSM2005)*, Budapest, Hungary, September 25-30, 2005, pp. 133-142.

Acceptance ratio: 30%

[C1] Poshyvanyk, D., Marcus, A., Dong, Y., Sergeyev, A., "IRiSS - A Source Code Exploration Tool" in the *Industrial and Tool Proceedings of the 21st IEEE International Conference on Software Maintenance (ICSM2005)*, Budapest, Hungary, September 25-30, 2005, pp. 69-72.

Acceptance ratio: 53%

Refereed Workshop Publications

[W7] McMillan, C., Poshyvanyk, D., and Reville, M., "Combining Textual and Structural Analysis of Software Artifacts for Traceability Link Recovery", in the *Proceedings of 5th International ICSE2009 Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE2009)*, Vancouver, Canada, May 18th, 2009, pp. 41-48.

[W6] Grechanik, M., Poshyvanyk, D., "Evaluating Recommended Applications", in the *Proceedings of International FSE2008 Workshop on Recommendation Systems for Software Engineering (RSSE2008)*, Atlanta, Georgia, November 10th, 2008.

[W5] Dit, B., Poshyvanyk, D., Marcus, A., "Measuring the Semantic Similarity of Comments in Bug Reports", 1st International ICPC2008 Workshop on Semantic Technologies in System Maintenance (STSM2008), Amsterdam, The Netherlands, June 10th, 2008.

[W4] Poshyvanyk, D., Petrenko, M., Marcus, A., "Integrating COTS Search Engines into Eclipse: Google Desktop Case Study", 2nd International ICSE2007 Workshop on Incorporating COTS Soft. into Software Systems: Tools and Techniques (IWICSS2007), Minneapolis, May 22, MN, 2007.

[W3] Poshyvanyk, D., Marcus, A., "Using Traceability Links to Assess and Maintain the Quality of Software Documentation", 4th ACM International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE2007), Lexington, KY, March 22-23, 2007, pp. 27-30.

[W2] Xie, X., Poshyvanyk, D., and Marcus, A., "Support for Static Concept Location with sv3D", in *Proceedings of 3rd IEEE International Workshop on Visualizing Software for Understanding and Analysis (VISSOFT2005)*, Budapest, Hungary, September 26, pp. 102-107.

[W1] Marcus, A., Xie, X., Poshyvanyk, D., "When and How to Visualize Traceability Links", in the *Proceedings of the 3rd ACM International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE2005)*, Long Beach, CA, November 8, pp. 56-61.

Formal Conference and Workshop Presentations, Research Visits

Paper presentation of "Modeling Class Cohesion as Mixtures of Latent Topics" at the ICSM'09, Edmonton, Alberta, Canada, September 24, 2009.

Paper presentation of "Using Information Retrieval to Support Software Maintenance Tasks" at the ICSM'09, Edmonton, Alberta, Canada, September 22, 2009.

Research visit to Accenture Technology Labs (hosted by Mark Grechanik), Chicago, IL, August 27-29, 2009

Project progress report presentation of "Software Plans: Multi-Dimensional Separation of Concerns" at the AFOSR Systems and Software Principal Investigators Meeting, Arlington, VA, May 27, 2009

Paper presentation of "Creating and Evolving Software by Searching, Selecting and Synthesizing Relevant Source Code" at the ICSE-NIER'09, Vancouver, British Columbia, Canada, May 20, 2009

Paper presentation of "Who Can Help Me with this Change Request?" at the ICPC'09, Vancouver, British Columbia, Canada, May 18, 2009

Paper presentation of "Evaluating Recommended Applications" at the FSE'08 RSSE, Atlanta, Georgia, November 10, 2008.

Invited job talk "Using Information Retrieval to Support Concept Location in Software" at Towson U., North Dakota State U., Lehigh U., The College of William and Mary, U. of Houston, U. of Denver, U. of Missouri-Rolla, U. of Louisiana at Lafayette, U. of Texas at San Antonio.

Research paper presentation of "Feature Location via Information Retrieval based Filtering of a Single Scenario Execution Trace" at IEEE/ACM ASE'07, Georgia, Atlanta, November 8, 2007.

Doctoral symposium presentation of "Using Information Retrieval to Support Design of Incremental Change of Software" at IEEE/ACM ASE'07, Georgia, Atlanta, November 5, 2007.

Research paper presentation of "Combining Formal Concept Analysis with Information Retrieval for Concept Location in Source Code" at IEEE ICPC'07, Banff, Canada, June 27, 2007.

Research paper presentation of "Integrating COTS Search Engines into Eclipse: Google Desktop Case Study" at ICSE'07 IWICSS, Minneapolis, MN, May 22, 2007.

Research paper presentation of "Using Traceability Links to Assess and Maintain the Quality of Software Documentation" at ACM GCT/TEFSE'07, Lexington, KY, March 23, 2007.

Research paper presentation of "The Conceptual Coupling Metrics for Object-Oriented Systems" at IEEE ICSM'06, Philadelphia, PA, September 27, 2006.

Research paper presentation of "Combining Probabilistic Ranking and Latent Semantic Indexing for Feature Identification" at IEEE ICPC'06, Athens, Greece, June 15, 2006.

Research demo presentation of "JIRiSS - an Eclipse plug-in for Source Code Exploration" at IEEE ICPC'06, Athens, Greece, June 16, 2006.

Research demo presentation of "3D Visualization for Concept Location in Source Code" at IEEE/ACM ICSE'06, Shanghai, China, May 26, 2006.

Poster presentation of "JRipples: An Eclipse Plug-in for Software Evolution" at ETX'05 at OOPSLA'05, San Diego, CA, October 2005.

Teaching Experience

Instructor, The College of William and Mary (Spring 2010)
Course: Software Engineering (CSci-435/535, Undergraduate/Graduate)

Instructor, The College of William and Mary (Fall 2009)
Course: Topics in Software Maintenance and Evolution (CSci-780-02, Graduate)

Instructor, The College of William and Mary (Spring 2009)
Course: Software Engineering (CSci-435/535, Undergraduate/Graduate)

Instructor, The College of William and Mary (Fall 2008)
Course: Topics in Software Maintenance and Evolution (CSci-780-02, Graduate)

Teaching Assistant, Wayne State University (Winter 2007, Fall 2005, Winter 2005)
Course: Intro to Software Engineering (CSC 4110, Undergraduate), taught by Andrian Marcus.

Teaching Assistant, Wayne State University (Winter 2007)
Course: Software Engineering Environments (CSC 7110, Graduate), taught by Andrian Marcus.

Lab Instructor, Wayne State University (Winter 2006)
Course: Data Structures and Algorithms (CSC2200, Undergraduate), taught by Suzanne Jennings

Teaching Assistant, Wayne State University (Fall 2004)
Course: Advanced Software Engineering (CSC 6110, Graduate), taught by Václav Rajlich.

Instructor, Wayne State University (Summer 2004)
Course: Intro to Computer Science (CSC 1000, Undergraduate).

Lab Instructor, Wayne State University (Winter 2004)
Course: Intro to Computer Science (CSC 1000, Undergraduate), taught by Narendra Goel.

Teaching Assistant, Wayne State University (Fall 2003)
Course: Hardware Architecture (CSC 4100, Undergraduate), taught by Loren Schwiebert.

Teaching Assistant, The National University of "Kyiv-Mohyla Academy" (Winter 2002)
Course: Declarative Programming and Knowledge-based Systems (Graduate).

Graduate Student Supervision

Meghan Revelle, *The College of William and Mary, Ph.D. candidate (May 2008 – Spring 2010)*
Ph.D. thesis title: *Recovering the Code-To-Concern Correspondence by Reverse Engineering Software Plans*

Collin McMillan, *The College of William and Mary, Ph.D. candidate (January 2009 - present)*
Ph.D. thesis title (tentative): *S³: Creating and evolving software via searching, selecting, and synthesizing relevant source code*

Malcom Gethers, *The College of William and Mary, Ph.D. candidate (January 2009 - present)*
Ph.D. thesis title (tentative): *Predicting and Identifying Faults in Software Systems*

Derrin Pierret, *The College of William and Mary, M.S. project (January 2009 – May 2009)*
M.S. project title: *Patterns in Software Artifacts*

Jesse Safran, *The College of William and Mary, readings course project (January 2009 – May 2009)*
Project title: *Identification of duplicate bug reports*

Trevor Savage, *The College of William and Mary, Chappell Summer Fellowship (May 2009 – present)*
Undergraduate project title: *Identifying and browsing linguistic topics in source code*

Xinrong (Travis) Xie, *Wayne State University, M.S. Student, advisor Andrian Marcus (2004 – 2006)*
M.S. Thesis Title: *Visualization of CVS Repository Information*

Yubo Dong, *Wayne State University, M.S. Student, advisor Andrian Marcus (2005 – 2007)*
M.S. Thesis Title: *IRiSS and JIRiSS – Interactive Tools for Concept Location in Software Systems*

Governance

Ph.D. dissertation committee member:

Andriy Fedorov, *The College of William and Mary*, Ph.D. (2009), advisor Nikos Chrisochoides.
Eddy Z. Zhang, *The College of William and Mary*, Ph.D., advisor Xipeng Shen
Panayiotis Foteinos, *The College of William and Mary*, Ph.D., advisor Nikos Chrisochoides
Sonia Haiduc, *Wayne State University*, Ph.D., advisor Andrian Marcus

Departmental/College service:

Graduate admissions committee.....2009/2010
Departmental colloquium committee2009/2010
Departmental colloquium committee2008/2009
Departmental hardware committee2008/2009

Professional Service

Program Committees:

26th IEEE International Conference on Software Maintenance ([ICSM](#)) 2010
18th IEEE International Conference on Program Comprehension ([ICPC](#))..... 2010
14th European Conference on Software Maintenance and Reengineering ([CSMR](#)) 2010
16th Working Conference on Reverse Engineering ([WCRE](#)) 2009
25th IEEE International Conference on Software Maintenance ([ICSM](#)) – Tool Demo Track..... 2009
25th IEEE International Conference on Software Maintenance ([ICSM](#)) 2009
17th IEEE International Conference on Program Comprehension ([ICPC](#))..... 2009
13th IEEE Euro Conf. on Software Maintenance and Reengineering ([CSMR](#)) – Tool Demo 2009
15th IEEE Working Conference on Reverse Engineering ([WCRE](#)) – Tool Demo Track 2008

Organizing committees:

Co-chair for the Early Research Achievements (ERA) track at the 26th IEEE International Conference on Software Maintenance ([ICSM](#)) 2010
Program Co-Chair for the 5th International Workshop on Traceability in Emerging Forms of Software Engineering ([TEFSE](#)) collocated with IEEE/ACM [ICSE](#) 2009
Proceedings Chair for IEEE International Conference on Program Comprehension ([ICPC](#)) 2009
Publicity Chair for 4th IEEE [VISSOFT](#)..... 2007
Co-organizer of [Working Session on IR Approaches in Software Evolution](#) at IEEE ICSM 2006

Conference session chair:

Working Conference on Reverse Engineering (WCRE) 2009
IEEE International Conference on Software Maintenance (ICSM) 2009
International Workshop on Traceability in Emerging Forms of SE (TEFSE)..... 2009
IEEE International Conference on Program Comprehension (ICPC)..... 2009
IEEE International Conference on Mining Software Repositories (MSR) 2009

Student Volunteer:

IEEE/ACM International Conference on Software Engineering (ICSE) 2006, 2005
ACM Conf. on Object-Oriented Programming, Sys, Languages and Apps (OOPSLA)..... 2005
IEEE International Workshop on Program Comprehension (IWPC) 2005
Microsoft Technical Student Partner for Wayne State University 2008, 2007, 2006, 2005

Reviewer:

IEEE Transactions on Software Engineering (TSE)	2008
ACM Transactions on Software Engineering and Methodology (TOSEM)	2009
Science of Computer Programming	2008
Empirical Software Engineering: An International Journal	2008
Journal of Software Maintenance and Evolution: Research and Practice	2008
Journal of Web Engineering	2008
Software Quality Journal	2008
Information and Software Technology Journal	2009
IEEE Transactions on Systems, Man, and Cybernetics	2009
IEEE International Conference on Software Maintenance (ICSM)	2007, 2005
IEEE International Conference on Program Comprehension (ICPC).....	2008, 2007, 2006, 2005
IEEE Working Conference on Reverse Engineering (WCRE).....	2008, 2007, 2006, 2005
IEEE European Conference on Software Maintenance and Reengineering (CSMR).....	2007, 2006
IEEE Working Conference on Mining Software Repositories (MSR)	2009, 2008, 2007
ACM Workshop on Traceability in Emerging Forms of Soft. Engineering (TEFSE).....	2007, 2005
ACM International Conference on Document Engineering (DocEng).....	2004
International Workshop on Principles of Software Evolution (IWPSE).....	2007, 2005