

Robert Tairas

Ph.D. Candidate
University of Alabama at Birmingham
Department of Computer and Information Sciences
Software Composition and Modeling Laboratory

1300 University Blvd, 123 Campbell Hall
Birmingham, AL 35294-1170
tairasr@cis.uab.edu
<http://www.cis.uab.edu/tairasr>

Education

University of Alabama at Birmingham (UAB)

Ph.D. candidate in Computer Science

Birmingham, AL
January 2006 - present

University of Alabama at Birmingham (UAB)

M.Sc. in Computer Science
Specialization in Software Engineering
GPA: 3.81

Birmingham, AL
December 2005

Samford University

B.Sc. in Computer Science and Mathematics
GPA: 3.92 (summa cum laude)

Birmingham, AL
May 1997

Research Interests

Software Engineering and Analysis

My general research interests include program analysis and understanding, software evolution and maintenance, and empirical software engineering. My current research specifically focuses on the analysis, understanding, and maintenance of code clones (i.e., duplicated sections of code).

Model-Driven Engineering (MDE)

I am also interested in the utilization of higher level representations through software models in MDE and Domain-Specific Languages during the software engineering process.

Projects

CeDAR: Clone Detection, Analysis, and Refactoring

The aim of this project is to unify the processes of clone detection, analysis, and refactoring. The work includes an evaluation of clone-related refactorings in open source software artifacts and the centralizing of clone group representation and maintenance.

Project web site: <http://www.cis.uab.edu/softcom/cedar>

An Information Retrieval Process to Aid in the Analysis of Code Clones

Latent Semantic Indexing (LSI) is used to cluster clone classes that have been identified initially by a clone detection tool with a goal to detect associations among the clustered clone classes and determine if they provide further comprehension to assist in the maintenance of clones.

Project web site: <http://www.cis.uab.edu/softcom/ir4pc>

CoCloRep: A DSL for Code Clones

A representation of code clones in a domain-specific language for analysis purposes that is developed in the AMMA platform (ATLAS Model Management Architecture).

Project web site: <http://www.cis.uab.edu/softcom/coclorep>

Visualization of Clone Detection Results

An alternative approach of visualizing detected clones (found by the CloneDR™ clone detection tool) by extending the AspectJ Development Tools Visualiser plugin.

Project web site: <http://www.cis.uab.edu/softcom/visual>

Clone Detection with Microsoft Phoenix

An investigation into an automatic clone detection technique developed as a plug-in for Microsoft's Phoenix framework that finds exact matching function level clones in a program using abstract syntax trees and suffix trees.

Project web site: <http://www.cis.uab.edu/softcom/phoenix>

Publications

Refereed Journals

Robert Tairas and Jeff Gray, "An Information Retrieval Process to Aid in the Analysis of Code Clones," *Empirical Software Engineering* (Special Issue on Information Retrieval for Program Comprehension), Vol. 14, No. 1, February 2009, pp. 33-56.

Jing Zhang, Yuehua Lin, Jeff Gray, and Robert Tairas, "Aspect Mining from a Modeling Perspective," *International Journal of Computer Applications in Technology* (Special Issue on Concern-Oriented Software), Vol. 31, No. 1/2, 2008, pp. 74-82.

Refereed Conferences and Workshops

Robert Tairas and Jeff Gray, "Sub-clone Refactoring in Open Source Software Artifacts," *Symposium on Applied Computing (SAC)*, Sierre, Switzerland, March 2010, *to appear*.

Robert Tairas, "Centralizing Clone Group Representation and Maintenance," *Student Research Competition, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 2009, pp. 781-782.

Robert Tairas, Marjan Mernik, and Jeff Gray, "Using Ontologies in the Domain Analysis of Domain-Specific Languages," *Workshop on Transformation and Weaving Ontologies in Model-Driven Engineering (TWOMDE), International Conference on Model Driven Engineering, Languages, and Systems (MoDELS)*, Springer-Verlag LNCS 5421, Toulouse, France, September 2008, pp. 332-342. (Best Paper Award)

Yu Sun, Zekai Demirezen, Frédéric Jouault, Robert Tairas, and Jeff Gray, "Tool Interoperability through Model Transformations," *International Conference on Software Language Engineering (SLE)*, Springer-Verlag LNCS 5452, Toulouse, France, September 2008, pp. 178-187.

Robert Tairas, Shi-Hsi Liu, Frédéric Jouault, and Jeff Gray, "CoCloRep: A DSL for Code Clones," *International Workshop on Software Language Engineering (ATEM), International Conference on Model Driven Engineering, Languages, and Systems (MoDELS)*, Nashville, TN, October 2007, pp. 91-99.

Robert Tairas, Jeff Gray, and Ira Baxter, "Visualization of Clone Detection Results," *Eclipse Technology Exchange Workshop (ETX), International Conference on Object-Oriented Programming, Systems, Languages and Applications (OOPSLA)*, Portland, OR, October 2006, pp. 50-54.

Robert Tairas and Jeff Gray, "Phoenix-Based Clone Detection using Suffix Trees," *ACM Southeast Conference*, Melbourne, FL, March 2006, pp. 679-684.

Doctoral Symposia

Robert Tairas, "Clone Maintenance through Analysis and Refactoring," *Doctoral Symposium, International Symposium on the Foundations of Software Engineering (FSE)*, Atlanta, GA, November 2008, pp. 29-32.

Robert Tairas, "Clone Detection and Refactoring," *Doctoral Symposium, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Portland, OR, October 2006, pp. 780-781.

Tool Demonstrations

Robert Tairas and Jeff Gray, "Get to Know Your Clones with CeDAR," *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 2009, pp. 817-818.

Robert Tairas, Jeff Gray, and Ira Baxter, "Visualizing Clone Detection Results," *International Conference on Automated Software Engineering (ASE)*, Atlanta, GA, November 2007, pp. 549-550.

Abstracts

Robert Tairas, "CeDAR: Unifying Clone Maintenance Processes," *ACM Mid-Southeast Conference*, Gatlinburg, TN, November 2009, p. 65.

Robert Tairas, "Information Retrieval-based Clone Analysis," *UAB Graduate Student Research Days*, Birmingham, AL, February 2009.

Robert Tairas, "Techniques in Code Clone Analysis," *Student Research Forum, International Symposium on the Foundations of Software Engineering (FSE)*, Atlanta, GA, November 2008.

Robert Tairas, "Applying Model-Driven Engineering Techniques to Represent Code Clones," *UAB Graduate Student Research Days*, Birmingham, AL, February 2008.

Robert Tairas, "Visualization of Clone Detection Results," *UAB Graduate Student Research Days*, Birmingham, AL, March 2007, p. 86. (Third Place: Session 12 – Mathematics and Computer & Information Sciences)

Robert Tairas, "Clone Detection with Microsoft Phoenix," *Alabama Academy of Sciences*, Troy, AL, March 2006.

Robert Tairas, "Searching for Code Clones using Suffix Trees in the Phoenix Framework," *UAB Graduate Student Research Days*, Birmingham, AL, March 2006, p. 77. (First Place: Session 6 – Mathematics and Computer & Information Sciences)

Robert Tairas, "Phoenix-Based Clone Detection using Suffix Trees," *ACM Mid-Southeast Conference*, Gatlinburg, TN, November 2005, p. 53. (First Place: Master's Division)

Presentations and Posters

Conference / Workshop / Meeting Talks

- “CeDAR: Unifying Clone Maintenance Processes,” *ACM Mid-Southeast Conference*, Gatlinburg, TN, November 13, 2009.
- “Centralizing Clone Group Representation and Maintenance,” *Student Research Competition Final Round, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 28, 2009.
- “Get to Know Your Clones with CeDAR,” *Tool Demonstration, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 27/28, 2009.
- “Information Retrieval-based Clone Analysis,” *UAB Graduate Student Research Days*, Birmingham, AL, February 26, 2009.
- “Clone Maintenance through Analysis and Refactoring,” *Doctoral Symposium, International Symposium on the Foundations of Software Engineering (FSE)*, Atlanta, GA, November 10, 2008.
- “Improving the Maintainability of Cloned Clone through a Coordinated Process of Clone Analysis and Refactoring,” *Dissertation Research Proposal*, Birmingham, AL, April 29, 2008.
- “Applying Model-Driven Engineering Techniques to Represent Code Clones,” *UAB Graduate Student Research Days*, Birmingham, AL, February 28, 2008.
- “CoCloRep: A DSL for Code Clones,” *International Workshop on Software Language Engineering (ATEM), International Conference on Model Driven Engineering, Languages, and Systems (MoDELS)*, Nashville, TN, October 1, 2007.
- “Visualization of Clone Detection Results,” *UAB Graduate Student Research Days*, Birmingham, AL, March 2, 2007.
- “Clone Detection and Refactoring,” *Doctoral Symposium, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Portland, OR, October 23, 2006.
- “Visualization of Clone Detection Results,” *Eclipse Technology Exchange Workshop (ETX), International Conference on Object-Oriented Programming, Systems, Languages and Applications (OOPSLA)*, Portland, OR, October 22, 2006.
- “Clone Detection with Microsoft Phoenix,” *Alabama Academy of Sciences*, Troy, AL, March 17, 2006.
- “Phoenix-Based Clone Detection using Suffix Trees,” *ACM Southeast Conference*, Melbourne, FL, March 11, 2006.
- “Searching for Code Clones using Suffix Trees in the Phoenix Framework,” *UAB Graduate Student Research Days*, Birmingham, AL, March 2, 2006.
- “Phoenix-Based Clone Detection using Suffix Trees,” *ACM Mid-Southeast Conference*, Gatlinburg, TN, November 11, 2005.

Invited Talks

“Maintaining Cloned Software,” *Research Colloquium Series, University of Alabama*, Tuscaloosa, AL, February 13, 2009.

“Introduction to Robocode and its use in CS201 – Introduction to Object-Oriented Programming labs,” *State-wide Workshop for K-12 Computer Science Teachers*, Birmingham, AL, July 31, 2006.

Posters

Robert Tairas, “Centralizing Clone Group Representation and Maintenance,” *Student Research Competition, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 2009.

Robert Tairas and Jeff Gray, “Maintaining Clones through Eclipse Refactoring Extensions,” *Workshop on Refactoring Tools, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Orlando, FL, October 2009.

Robert Tairas, “Techniques in Code Clone Analysis,” *Student Research Forum, International Symposium on the Foundations of Software Engineering (FSE)*, Atlanta, GA, November 2008.

Robert Tairas, Jeff Gray, and Ira Baxter, “Visualizing Clone Detection Results,” *Tool Demonstration, International Conference on Automated Software Engineering (ASE)*, Atlanta, GA, November 2007.

Robert Tairas, Jeff Gray, and Ira Baxter, “Visualization of Clone Detection Results,” *Eclipse Technology Exchange Workshop (ETX), International Conference on Object-Oriented Programming, Systems, Languages and Applications (OOPSLA)*, Portland, OR, October 2006.

Funding

Graduate Research Assistant position since Fall 2007, which is funded by a National Science Foundation (NSF) Computing Processes and Artifacts (CPA) grant entitled “A Transformational Approach to Clone Refactoring.” Assisted my advisor in the writing of this grant proposal. In addition, assisted in grant proposals to Microsoft Research, NASA, Hewlett-Packard, and Google.

Professional Activities

Conferences / Workshops / Meetings Attended

- AAS Alabama Academy of Science (2006)
 - ACM Mid-Southeast Conference (2005)
- ACM-SE ACM Southeast Conference (2006)
- ASE International Conference on Automated Software Engineering (2007)
- ATEM International Workshop on Software Language Engineering (2007)
- ETX Eclipse Technology Exchange Workshop
- FSE International Symposium on the Foundations of Software Engineering (2008)
- OOPSLA International Conference on Object-Oriented Programming, Systems, Languages, and Applications (2006, 2008, 2009)
- WRT Workshop on Refactoring Tools (2008, 2009)

Reviewer

- Carpathian Journal of Mathematics (2009)
- SCP Science of Computer Programming (2008)

Additional Reviewer

- ACM-SE ACM Southeast Conference (2006)
- AOSD International Conference on Aspect-Oriented Software Development (2008)
- ATEM International Workshop on Software Language Engineering (2007)
- DOA International Symposium on Distributed Objects and Applications (2006)
- DSL IFIP Working Conference on Domain Specific Languages (2009)
- ECMDA European Conference on Model-Driven Architecture (2008)
- GPCE International Conference on Generative Programming and Component Engineering (2006)
 - International Workshop on Models@run.time (2009)
- JOT Journal of Object Technology (2005)
- MODELS International Conference on Model Driven Engineering Languages and Systems (2009)
- OOPSLA International Conference on Object-Oriented Programming, Systems, Languages, and Applications (2008)
- ICSOC International Conference on Service-Oriented Computing (2009)
 - IET Software (2007)
- TOOLS International Conference on Objects, Models, Components, and Patterns (2007, 2009)
- TOSEM ACM Transactions on Software Engineering and Methodology (2008)

Service

- AOSD *Web Chair*, International Conference on Aspect-Oriented Software Development (2009)
- MtATL *Program Committee*, International Workshop on Model Transformation with ATL (2009)
- OOPSLA *Student Volunteer*, International Conference on Object-Oriented Programming, Systems, Languages, and Applications (2008, 2009)
- UAB ACM *Chair*, UAB Student Chapter of the ACM (2009)
- UAB ACM *Secretary*, UAB Student Chapter of the ACM (2008)

Awards and Honors

Graduate Awards

- 2nd place in the Ph.D. Division at the *ACM Mid-Southeast Conference* (2009)
- Finalist of the *Student Research Competition* at the *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)* (2009)
- Best Paper Award at the *Workshop on Transformation and Weaving Ontologies in Model-Driven Engineering (TWOMDE)* (2008)
- 3rd place in the Mathematics and Computer and Information Sciences session at the *UAB Graduate Student Research Days* (2007)
- Passed Ph.D. Level 1 Qualifying Exam “With Distinction” (2007)

1st place in the Mathematics and Computer and Information Sciences session at the *UAB Graduate Student Research Days* (2006)

1st place in the Masters Division at the *ACM Mid-Southeast Conference* (2005)

Travel Grants

From ACM SRC to attend the OOPSLA Student Research Competition (2009)

From UAB GSA to attend OOPSLA (2008, 2009)

From ACM SIGSOFT CAPS to attend ASE (2007)

From UAB GSA to attend ATEM at MoDELS (2007)

From ACM to attend the OOPSLA Doctoral Symposium (2006)

From UAB GSA to attend the ACM Mid-Southeast Conference (2005)

Undergraduate Awards

Outstanding Computer Science Senior, Samford University (1996)

Recipient of the Greg Walker Memorial Scholarship Award for Outstanding Computer Science Junior, Samford University (1995)

Teaching Experience

Instructor

CS101 Fluency in Information Technology (Fall 2006)

Lab Instructor

CS101L Fluency in Information Technology (Fall 2006)

CS201L Introduction to Object-Oriented Programming (Spring 2006, Summer 2006)

CS303L Algorithms and Data Structures (Spring 2007)

Teaching Assistant

CS303 Algorithms and Data Structures (Spring 2007)

CS405/505 Programming Languages (Spring 2007)

CS436/636/736 Computer Security (Spring 2006)

CS620/720 Software Development I (Spring 2006)

CS650/750 Automata, Languages, and Computation (Fall 2006)

CS622/722 Reflective and Adaptive Systems (Fall 2006)

Educational Outreach

Student Mentoring

Assisted in the mentoring of McNair Scholars Dornesia Ward (Alabama State University) in 2007 and Tavaris Payton (Talladega College) in 2009.

Blazer BEST Robotics Competition

Assisted as Head Scorekeeper in the competition at the UAB Hub for BEST (Boosting Engineering, Science, and Technology) in 2008 and 2009. Led a group from the CIS department responsible for the configuration and management of the scoring software system.

Linux Workshop

Presented tutorials on Linux sponsored by the UAB student chapter of the ACM at the beginning of every semester since Spring 2008. The tutorials introduce general Linux commands and functions as well as Linux configurations specific to the CIS department.

UAB High School Programming Competition

Assisted in the annual state-wide event held at UAB. In 2006, was Head Volunteer leading a group responsible for the scoring process of programs submitted by the participants. In 2008 and 2009, was a Volunteer Grader assisting in the grading of submitted programs using an online grading system.

UAB CIS and UAB ACM Representative

Represented the CIS department and the UAB student chapter of the ACM in various promotional events, including Parents Fair, Graduate School Fair, Student Organization Expo, and UAB Day.

Memberships

Association for Computing Machinery (ACM) (2006 – present)
Special Interest Groups: SIGAPP, SIGPLAN, and SIGSOFT

Institute of Electrical and Electronics Engineers (IEEE) (2007 – present)

Professional Experience

Georgia State University, Atlanta, GA – Programmer Analyst (2003 – 2004)

Enhanced the University Library's web site with the design and development of features including a content management system for various parts of the web site.

Designed and developed various projects including the web display of XML documents based on the Encoded Archival Description (EAD) standard using XSL stylesheets and an interface on a handheld for selection of collections for specialized display on the web site.

SpryData Internet Solutions, Inc., Birmingham, AL – Systems Analyst (1998 – 2003)

Designed and developed content management and e-commerce systems in both the Windows and Unix/Linux environment.

Communicated with clients throughout the life cycle of projects regarding project status, resolution of problems, client review of project, and post-development support.

The Global Center, Samford University – Research and Information Coordinator (1997 – 1998)

Designed and developed customized functions in ESRI's ArcView to enable access of GIS data on Sun SPARC stations in the Global Center exhibit area.

Assisted in the deployment and maintenance of a Virtual Research Center system obtained from an educational sharing agreement with NASA's Marshall Flight Center in Huntsville, Alabama. The system was maintained at the Global Center and was utilized by various academic departments at Samford University.