The University of Alabama
Department of Computer Science
Colloquium Series Speaker

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Information Retrieval support for Concept Location in Software
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Abstract:
Concept (or feature) location in software is the process of identifying the parts of the source code that correspond to a specific functionality. This process is a prerequisite to program comprehension and is one of the most common activities undertaken by developers during software evolution. We are proposing an approach to concept location in software based on indexing the source code and additional data using Information Retrieval (IR) methods. This approach allows users to formulate queries in natural language and obtain results in form of software components related to the query.

One of the problems common to all concept location techniques is filtering and ranking the results such that relevant parts of the source code are quickly identified by the developers. To address this problem we propose three separate approaches, one that clusters the results of a search using formal concept analysis, one that merges the results with execution traces, and one where the search results are used in conjunction with software dependencies. The advantages and disadvantages of each approach are discussed with respect to results obtained from case studies on existing large software systems, such as Mozilla and Eclipse.

Bio:
Dr. Andrian Marcus is assistant professor in the Department of Computer Science at Wayne State University in Detroit, USA. He received his PhD in Computer Science from Kent State University, USA in 2003. His research interests include software evolution, program comprehension, and software visualization, focusing on the management of unstructured information during evolution of large scale software systems. Dr. Marcus served on the Steering Committee of the IEEE International Conference on Software Maintenance (ICSM) between 2005-2008 and on the steering Committee of the IEEE International Workshop on Visualizing Software for Understanding and Analysis (VISSOFT) since 2007. He is the Program Co-Chair of the 17th IEEE International Conference on Program Comprehension (ICPC 2009) and the Program Co-Chair of the 26th IEEE International Conference on Software Maintenance (ICSM 2010). His research is currently funded through grants from the US National Science Foundation, the US National Institute of Health, and IBM. Dr. Marcus' publications earned a Best Dissertation Paper Award at the IEEE ICSM in 2004 and two Best Paper Awards at the IEEE ICPC in 2006 and 2007 respectively. He is also the recipient of a Fulbright Junior Research Fellowship in 1997.