

## Objective

Research internship to explore software defect management strategies, particularly those that involve static analysis.

## Education

University of Maryland – UMD – College Park MD

**Ph.D. Computer Science** – January 2006 to present

Southern Methodist University – SMU – Dallas TX

**M.S. Computer Science** – GPA: 4.00 – Graduation: August 2005

**B.S. Computer Engineering** – GPA: 3.97 – Graduation: May 2003

## Research

### University of Maryland

- Industrial Experiences with Static Analysis (with Prof. Bill Pugh): Learn through observation, interview, and survey how static analysis tools are used in practice to improve software quality and security. We aim to validate/invalidate tool vendor assumptions and improve user practices. (<http://findbugs.sourceforge.net/>)
- PatternFinder (with Prof. Ben Shneiderman): A form-based visual query interface that searches for and visualizes patterns that occur in a sparse sequence of temporal events. (<http://www.cs.umd.edu/hcil/patternfinder/>)

### Previous Research

- Speech analysis and machine learning to identify spam voice messages. Siper Systems Inc.
- Interactive Visualization of proofs to verify a pipelined microprocessor. Advisor: Dr. Peter Seidel, SMU
- Optimization of a cochlea model algorithm for noise reduction in hearing aids. Advisor: Dr. Peter Seidel, SMU
- RSDnet: Using non-expert web users to build a Romanian Semantic Dictionary. Advisor: Dr. Rada Mihalcea, University of North Texas
- Flood prediction using Hidden Markov Models. Advisor: Dr. Margaret Dunham, SMU

## Experience

### Internships

	<i>Skills Required</i>	
<b>IBM Research:</b> Interactive visualization of audio search results	Flash, Dojo, Lucene	05/2008 – 08/2008
<b>Sipera Systems:</b> Automatically identify unsolicited (spam) messages	Speech Analysis, Java	05/2005 – 12/2005
<b>Memorystream:</b> Web and business development internship	Flash, Web design	01/2005 – 05/2005
<b>Mercyships:</b> Web interface for an online banking system	Java, Web Design, SQL	05/2002 – 08/2002
<b>Nortel Networks:</b> Assisting database and installation engineers	Visual Basic, Excel, Unix	01/2000 – 12/2000

### Graduate Research and Teaching Assistantships

<b>UMD RA:</b> User studies for static analysis tools, Unit testing concurrent software, Maintain automated student project submission system	J2EE, MySQL, Statistics, Controlled studies	05/2006 – present
<b>UMD TA:</b> CMSC 433, Prog. Language Technologies & Paradigms	Java, Eclipse IDE	01/2006 – 05/2006
<b>SMU TA:</b> CSE 2341, Principles of Computer Science II	C++, communication	08/2003 – 05/2005
<b>SMU:</b> Tutor in Calculus, Electrical Engineering and Computer Science	Teaching	09/2002 – 05/2003

## Technical Competencies

<b>Programming</b>	Java, C/C++, SQL, Visual C#, UML, JavaScript and ActionScript
<b>Web Apps and Databases</b>	Adobe Flash and Flex, Servlets and J2EE, XML, CSS, Dojo Toolkit, MySQL
<b>Others</b>	Good organizational, communication and leadership skills.

## Publications

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### Refereed Journals

N. Ayewah, D. Hovemeyer, J. D. Morgenthaler, J. Penix, and W. Pugh (2008) "Using Static Analysis to Find Bugs", *IEEE Software*, 25, 5 (Sep. 2008), 22-29.

N. Ayewah, R. Mihalcea, V. Nastase, & D. Tatar. (2004) "RSDnet: A Web-based Collaborative Framework for Building Multilingual Semantic Networks." *Studia Univ. Babeş-Bolyai Informatica*, Volume XLIX, number 1, 2004, p. 31 - 44.

### Refereed Conferences and Workshops

N. Ayewah, and W. Pugh (2008) "A report on a survey and study of static analysis users", In *Proceedings of the 2008 Workshop on Defects in Large Software Systems* (Seattle, Washington, July 20 - 20, 2008). *DEFECTS '08*. ACM, New York, NY, 1-5.

W. Pugh and N. Ayewah (2007) "Unit Testing Concurrent Software", *IEEE/ACM International Conference on Automated Software Engineering*, Atlanta GA, Nov 5-9, 2007.

N. Ayewah, W. Pugh, J. D. Morgenthaler, J. Penix, and Y. Zhou. (2007) "Using FindBugs on production software." In *Companion To OOPSLA 2007*, Montreal, Canada, October 2007. ACM, New York, NY, 805-806.

N. Ayewah, W. Pugh, J. D. Morgenthaler, J. Penix and Y. Zhou. (2007) "Evaluating Static Analysis Defect Warnings On Production Software", *Workshop Program Analysis for Software Tools and Engr.*, June, 2007.

J. Spacco, W. Pugh, N. Ayewah, & D. Hovemeyer. (2006) "The Marmoset project: an automated snapshot, submission, and testing system." In *Companion To OOPSLA 2006*, Portland, OR. ACM, New York, 669-670.

N. Ayewah, N. Kikkeri, P.M. Seidel, & S. Beyer. (2005) "Challenges in the formal verification of complete state-of-the-art processors," *Proc. of 2005 International Conference on Computer Design*, pp. 603-606, 2005.

N. Ayewah, P. Seidel. (2004) "Fused Models for Noise Reduction in Speech Processing." *Proc. 38th Asilomar Conference on Signals, Systems and Computers*, Nov 7-10, Pacific Grove, CA.

N. Ayewah, R. Mihalcea, & V. Nastase. (2003) "Building Multilingual Semantic Networks with Non-Expert Contributions over the Web." *Proc. KCAP 2003 Workshop on Distributed and Collaborative Knowledge Capture*, Oct 26, Sanibel Island, FL.

### Other Publications

N. Ayewah. (2005) *VAMP Explorer: An Interactive Framework for Navigating a Complex Hierarchy of PVS Theorems*. Masters Thesis, Southern Methodist University, Dallas, TX, Aug 2005.

M. Dunham, N. Ayewah, Z. Li, J. Huang & K. Bean. (2004) "Spatial and Temporal Prediction Using Data Mining Tools." In: Y. Manolopoulos, A. Papadopoulos, M. Vassilakopoulos (Eds.), *Spatial Databases: Technologies, Techniques and Trends*. Idea Group Inc., December 2004.

## Honors

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IEEE Software Article "Using Static Analysis to Find Bugs" (2008) selected as Top Pick in the last 25 years, (To appear in *IEEE Software* January/February 2009).

Verizon Graduate Fellowship, University of Maryland, 2005

Best Research Award, Computer Science and Engineering, SMU Graduate Research Day – 2005

Standard Bearer (Valedictorian), SMU School of Engineering – 2003

Outstanding Senior Man Award, SMU School of Engineering – 2003

Outstanding Undergraduate Award Honorable Mention from the Computer Research Association – 2002

Tau Beta Pi National Engineering Honor Society – 2001

SMU J. Lindsay Embrey Engineering Scholar – 1998 to 2003

## Activities

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Association for Computing Machinery.

Habitat for Humanity – September 2004 to October 2005.

President of Higher Ground, SMU Campus Ministry – 2002 to 2003.

Director of International Mentor Program to assist incoming international students – 2000 to 2003.

Participated in service and community development through the SMU Service House – 2002 to 2003.

## References

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Available upon request