

# Cyntrica Eaton

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## Research Interests

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I am currently conducting research in web testing with a specific emphasis on characterization and detection of configuration-specific faults. Given the areas involved in solving this problem, my interests include software testing, runtime environment-induced faults, and the application of machine learning techniques in software engineering research.

## Education

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University of Maryland (UMD), College Park, Maryland

Ph.D. Candidate, Computer Science (*expected December 2007*)

- Dissertation Topic: “A Framework for Detecting and Diagnosing Configuration-Specific Faults in Web Applications”
- Advisor: Dr. Atif Memon

Norfolk State University, Norfolk, Virginia

B.S., Computer Science, May 2001

## Academic Experience

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University of Maryland, College Park, Maryland

*Graduate Student*

**September 2001 - present**

Includes current Ph.D. research, Ph.D. and Masters level coursework.

*Teaching Assistant*

- CMSC 412 Operating Systems **Fall 2006**  
Duties at various times have included office hours, leading weekly computer lab exercises, and grading programming assignments.
- CS Summer Program in Research and Learning (SPIRAL) **Summer 2005**  
CS SPIRAL provides undergraduate students majoring in computer science an opportunity to preview Grad Student life through a combination of coursework and research projects over a six week period. In fulfilling my duties as a Teaching Assistant, I conducted recitation sessions for the *Computer Science and Games* course, assisted the students in their research projects, and served as a chaperone during field trips.

## Honors and Awards

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Grace Hopper Celebration of Women in Computing Travel Scholarship (*Sponsored by the National Science Foundation*), 2006

Upsilon Pi Epsilon Honor Society, 2006

Census Bureau Cash-in-a-Flash Award, 2002

Norfolk State University: graduated Summa Cum Laude, Honors in Computer Science, 2001

David and Lucile Packard Foundation Scholarship Recipient, 2001

## Honors and Awards (continued)

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National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM) Fellowship Recipient, 2001

AT&T Labs Fellowship Program Grant Awardee, 2001

Alpha Kappa Mu Honor Society, 2000

Golden Key Undergraduate Scholar Award, 2000

Golden Key National Honor Society, 2000

Dozoretz National Institute for Mathematics and Applied Sciences (DNIMAS) Scholarship, 1996

## Leadership and Service

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Represented GEM at the **Black Engineer of the Year Awards** (*Facilitated a seminar entitled "Graduate School 101"*), 2006

Represented GEM at the Career Communications Group **Minorities in Research Science Conference**, 2005

National Society of Black Engineers, Norfolk State University Chapter, 1998-2001

## Invited Talks

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Detecting and Diagnosing Configuration Specific Faults in Web Applications, Computer and Information Sciences Department, Georgetown University, December 8, 2006

Detecting and Diagnosing Configuration Specific Faults in Web Applications, Computer and Information Sciences Department, University of Delaware, November 29, 2006

Detecting and Diagnosing Configuration Specific Faults in Web Applications, Information Systems Department, University of Maryland (Baltimore County), November 16, 2006

## Research Software

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**WebCAT:** In order to preserve the effectiveness of the World Wide Web (WWW) as a communication medium, web developers must have a keen understanding of how pages within their website are rendered to the diversely equipped Web audience. More specifically, since users explore the WWW with a wide variety of browser, browser version, and platform configurations, the display of individual web pages can be significantly different based on the actual browsing environment. Such differences can essentially threaten the ability for pages to be displayed and to function as the author intended resulting in documents with missing elements, improper text alignments, and malfunctioning scripts.

Given that web page rendering is largely based on the tags that are contained within the HTML source code for the document and the relative support for a tag within a browsing environment, our approach to identifying page-to-browser compliance issues is to scan the document source for the presence of tags known to be unsupported within specific browser/version/platform environments. As a result of our work, we have created a tool, the Web Compliance Analysis Tool (WebCAT), that will evaluate compliance for an entire website based on both predefined and, when necessary, user-specified sets of rules that specify the tags that are unsupported within specific environments. The ability of the tool to accept user-defined rules allows it to be much more flexible than current page-browser compliance tools and, subsequently, more equipped to deal with newer compliance rules as they evolve.

## Publications

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*Articles in Refereed Journals* "An Empirical Approach to Testing Web Applications Across Diverse Client Platform Configurations," Cyntrica Eaton and Atif M. Memon, *International Journal on Web Engineering and Technology (IJWET)*, *Special Issue on Empirical Studies in Web Engineering*, Inderscience Publishers. (accepted for publication; to appear)

## Publications (continued)

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*Articles in Refereed Conferences* “Evaluating Web Page Reliability across Varied Browsing Environments,” Cyntrica Eaton and Atif M. Memon, *Proceedings of the 15th IEEE International Symposium on Software Reliability Engineering (ISSRE 2004)*, Saint-Malo, Bretagne, France, Nov. 2-5, 2004.

“Visualizing Missing Data: Graph Interpretation User Study,” Cyntrica Eaton, Catherine Plaisant, and Terence Drizd, *INTERACT 2005*, Rome, Italy, September 12-16, 2005.

*Articles in Refereed Workshops* “Improving Browsing Environment Compliance Evaluations for Websites,” Cyntrica Eaton and Atif M. Memon, *International Workshop on Web Quality (WQ 2004)*, July 27, 2004, Munich, Germany.

*Posters in Refereed Conferences* “A Framework for Detecting and Diagnosing Configuration-Specific Faults in Web Applications,” Cyntrica Eaton and Atif Memon, *The American Association for the Advancement of Science (AAAS) Annual Meeting*, San Francisco, California, February 15-19, 2007. (**accepted for publication; to appear**)

“The Challenge of Missing and Uncertain Data,” Cyntrica Eaton, Catherine Plaisant, and Terence Drizd, *Proceedings of the 14th IEEE Visualization 2003 (VIS 2004)*, Seattle, Washington, October 19-24, 2003.

## Professional Experience

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### University of Maryland

#### Math SPIRAL — College Park, Maryland

*Summer Graduate Program Coordinator*

**April - July 2007**

*Summer Graduate Program Coordinator*

**April - July 2006**

Responsible for various planning and implementation aspects including preparing student files for review, organizing field trips, inviting speakers for colloquium, facilitating lunch/reception activities, and arranging travel of students/speakers to and from campus.

### National Institute of Standards and Technology

#### Visualization and Usability Group — Gaithersburg, Maryland

*Computer Science Trainee*

**June - August 2004**

*Computer Science Trainee*

**June - August 2003**

Designed, implemented, and refined SQL code to support the analysis of remotely gathered usability data.

### University of Maryland

#### Human-Computer Interaction Lab — College Park, Maryland

*Research Assistant*

**October 2002 - January 2004**

Surveyed a variety of information visualization applications to determine how these tools can be used to improve the exploration and manipulation of health-related data.

### Census Bureau

#### Human Factors and Usability Lab — Suitland, Maryland

*Research Assistant*

**June - August 2002**

Designed a web-based survey prototype to support electronic form design research.

### Eastman Kodak Company

#### Digital Lab System — Rochester, New York

*Research Assistant*

**June - August 2001**

Developed a metadata editor that allowed users to observe and manipulate the contents of film metadata files. In short, this tool gave researchers and other users a novel opportunity to open and view such files and modify the data if necessary.

## Professional Experience (continued)

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### Norfolk State University

#### Federal Aviation Administration Project — Norfolk, Virginia

*Research Assistant*

**August, 2000 - May 2001**

Designed an XML data storage system that consisted of a Java-based data acquisition interface and relational database.

### Massachusetts Institute of Technology (MIT)

#### MIT Summer Research Program (MSRP) — Cambridge, Massachusetts

*MSRP Intern*

**June - August 2000**

Developed a client/server environment from the ground up using Java. The server was capable of transmitting image files to multiple clients upon request; each client was designed to receive images from the server and display them to the user.

*MSRP Intern*

**June - July 1999**

Designed a prototype for a natural language interface that would allow students to navigate the web-based Physics Interactive Video Tutor system using English sentences instead of conventional, context-deficient keywords.

### Norfolk State University

#### Bringing Education and Science Together (BEST) Lab — Norfolk, Virginia

*Research Assistant*

**September, 1997 - June 2000**

Generated and analyzed scientific visualizations of Stratospheric and Gas Experiment II (SAGE II) water vapor data.

## References

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**Atif Memon (Advisor)**, *atif@cs.umd.edu*, University of Maryland College, Park

**Rance Cleavland**, *rance@cs.umd.edu*, University of Maryland College, Park

**William Gasarch**, *gasarch@cs.umd.edu*, University of Maryland College, Park

**Vibha Sazawal**, *vibha@cs.umd.edu*, University of Maryland College, Park