

Rachel E. Harsley

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850 South Morgan Avenue
Chicago, IL 60607

EDUCATION

University of Illinois at Chicago, Chicago, IL

Ph.D. Student in Computer Science

Expected Graduation Fall 2016;

Advisor: Dr. Barbara Di Eugenio

Vanderbilt University, Nashville, TN

B.S. in Computer Science, May 2011

Georgia Institute of Technology, Metz, FR

Study Abroad Participant, Spring 2011

RESEARCH INTERESTS

- Natural Language Processing
- Machine Learning
- Computer Science Education
- Collaborative Learning Environments

RESEARCH SUMMARY

My research applies natural language processing and machine learning techniques to the emergent field of Collaborative Intelligent Tutoring Systems (CITS). The work shifts the standard paradigm of an intelligent tutoring system (ITS) from a one-to-one learning model to multiple-student, computer-mediated learning. The research situates itself in the domain of Computer Science education and addresses widely applicable issues of defining, tracking, and adaptively promoting effective collaboration and learning. ChiQat-Tutor is a joint effort and product of this work and other related work. It is a desktop-based Intelligent Tutoring System for learning core Computer Science concepts including linked lists, binary search trees, and recursion.

REFEREED CONFERENCE PAPERS & PROCEEDINGS

1. **Harsley, R.**, Gupta, B., Di Eugenio, B., & Li, H. (2016). Hit Songs' Sentiments Harness Public Mood & Predict Stock Market. In *Proceedings of the 7th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*. San Diego, CA; USA: Association for Computational Linguistics. "In press"
2. **Harsley, R.**, Di Eugenio, B., Green, N., Fossati, D., & Acharya, S. (2016). Integrating Support for Collaboration in a Computer Science Intelligent Tutoring System. In *Proceedings of the 13th International Conference on Intelligent Tutoring Systems*. Croatia. "In press"
3. Green, N., Di Eugenio, B., **Harsley, R.**, Fossati, D., & AlZoubi, O. (2016). Behavior and Learning of Students using Worked-out Examples in a Tutoring System. In *Proceedings of the 13th International Conference on Intelligent Tutoring Systems*. Croatia. "In press"
4. **Harsley, R.**, Green, N., Alizadeh, M., Acharya, S., Fossati, D., Di Eugenio, B., & AlZoubi, O. (2016). Incorporating Analogies and Worked Out Examples as Pedagogical Strategies in a Computer Science Tutoring System. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education* (pp. 675–680). Memphis, TN, USA: ACM.
5. **Harsley, R.**, Green, N., Di Eugenio, B., Aditya, S., Fossati, D., & Al Zoubi, O. (2016). Collab-ChiQat: A Collaborative Remaking of a Computer Science Intelligent Tutoring System. In *Proceedings of*

- the 19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion* (pp. 281–284). San Francisco, CA, USA: ACM.
6. AlZoubi, O., Fossati, D., Di Eugenio, B., Green, N., Alizadeh, M., & **Harsley, R.** (2015). A Hybrid Model for Teaching Recursion. In *Proceedings of the 16th annual ACM SIGITE conference on Information technology education*. Chicago, IL, USA.
 7. Di Eugenio, B., Green, N., Alizadeh, M., **Harsley, R.**, & Fossati, D. (2015). Worked-out Examples in a Computer Science Intelligent Tutoring System. In *Proceedings of the 16th annual ACM SIGITE conference on Information technology education*. Chicago, IL, USA.
 8. Green, N., Fossati, D., Di Eugenio, B., **Harsley, R.**, AlZoubi, O., & Alizadeh, M. (2015). Student Behavior with Worked-out Examples in a Computer Science Intelligent Tutoring System. Presented at the 3rd International Conference on Educational Technologies, Florianópolis, Santa Catarina, Brazil.
 9. **Harsley, R.** (2015). Learning Together: Expanding the One-To-One ITS Model for Computer Science Education. In *Proceedings of the Eleventh Annual International Conference on International Computing Education Research* (pp. 263–264). New York, NY, USA: ACM.
 10. **Harsley, R.**, Green, N., Alizadeh, M., Tandon, A., & Prabhu, A. (2015). Sick Kitty – Toward Promoting Deductive Reasoning through an Embodied Medical Diagnosis Game. In *Proceedings of the Games+Learning+Society (GLS) Conference*. Madison, WA: ETC Press.
 11. Alizadeh, M., Di Eugenio, B., **Harsley, R.**, Green, N., Fossati, D., & AlZoubi, O. (2015). A study of analogy in computer science tutorial dialogues. In *CSEDU 2015 - 7th International Conference on Computer Supported Education, Proceedings* (pp. 232–237). SciTePress.
 12. Green, N., AlZoubi, O., Alizadeh, M., Di Eugenio, B., Fossati, D., & **Harsley, R.** (2015). A scalable intelligent tutoring system framework for computer science education. In *CSEDU 2015 - 7th International Conference on Computer Supported Education, Proceedings* (pp. 372–379). SciTePress.
 13. **Harsley, R.** (2014). Towards a Collaborative Intelligent Tutoring System Classification Scheme., In *Proceedings Of The 11th International Conference On Cognition And Exploratory Learning In The Digital Age (Celda 2014)* (pp. 290–291). Porto, Portugal.

POSTERS & INVITED TALKS

- Harsley, R. et al. (2015). Navigating Academia and the Technical Internship Process. Panel presentation at Google Chicago. Chicago, IL.
- Harsley, R. (2013). Leveraging Mobile Technology for Computer Science Learning in Low Socioeconomic and Minority Communities. Poster presentation at the CRA-W Graduate Cohort Workshop. Boston, Massachusetts.
- Harsley, R. et al. (2013). Voices from the Field. Panel presentation at the Illinois GEM Grad Lab. Chicago, IL.

MEDIA & PRESS

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|------------------------------------------------------------------------------------|-------------------------------------------------|
| • 2016 WinTrust Business Lunch Guest | <i>WGN Radio</i> |
| • 2016 “10 Unique Black Women-Owned Tech Startups” | <i>Black Enterprise Magazine</i> |
| • 2016 “A UIC PhD Student Made a Messaging App That Doesn’t Leave a Digital Trail” | <i>ChicagoInno</i> |
| • 2014 “Women in STEM” | <i>National Society of Black Engineers News</i> |
| • 2014 University Promotional Video | <i>UIC Office of the Chancellor</i> |
| • 2014 “Computer Science Students Among 50 for the Future” | <i>UIC News</i> |
| • 2014 Featured Student | <i>UIC Engineering News Magazine</i> |

SKILLS

Creative thinker and problem solver with ability to plan and implement;
 Strong leadership and communication ability with valuable research and industry experience
 C++, Java, Objective-C, C, C#, JavaScript, HTML, CSS, SQL, Python, Lisp;

TEACHING EXPERIENCE

University of Illinois at Chicago , Chicago, IL Teaching Assistant, Department of Computer Science (4.61/5 Student Evaluation Rating Spring '14)	2011-2012, 2014
Northwestern University , Chicago IL Java Course Instructor, Center for Talent Development	November, 2013
University of Illinois at Chicago , Chicago, IL Tutor & Student Coordinator of the African American Academic Network Learning Resource Center	2012-2013

HONORS & AWARDS

Chicago Urban League Leading Woman in Tech Award	2015
UIC Abraham Lincoln Fellowship	2015
Xerox Technical Minority Scholarship	2013, 2015
NSBE Region IV - Living the NSBE Mission Scholarship	2013
Tapia Scholarship Travel Grant Award	2013
Illinois Technology Foundation Fifty for the Future Award	2013
Microsoft NSBE Scholarship	2012, 2013
CRA-W Grad Cohort Travel Scholarship	2012
National GEM Consortium GEM Fellowship	2012
UIC C.S. Department Grace Hopper Travel Scholarship	2007-2011
Vanderbilt University Chancellor's Scholar Award	

SERVICE & LEADERSHIP EXPERIENCE

Reviewer:

- Games + Learning + Society Conference (2015)
- International Conference on Intelligent Tutoring Systems (2014)
- International Conference on Artificial Intelligence in Education (2013, 2015);

Christian Education Teacher; Grace New Covenant Church, St. Louis, MO	2011, 2015
Media Ministry Volunteer; Apostolic Faith Church, Chicago, IL	2013
Student Government Secretary; Georgia Tech-Lorraine , Metz, France	2011 (spring)
Residential Advisor; Vanderbilt University , Nashville, TN	2008-2011
Executive Board Member; Vanderbilt University Chapter of NSBE , Nashville, TN	2007-2011

PATENTS


- Harsley, R. (2015, May 8). System and Method for Stateless Communication Device Control. U.S. Provisional Patent Appl. 62/159,091

INDUSTRY EXPERIENCE

MAYCHILD TECHNOLOGIES Maychild Technologies LLC, St. Louis, MO
TECHNOLOGIES Founder and CEO 2012-present

Developed Clean Slate Messenger, a messaging platform for private, instant chat. In three months since the soft-launch on iOS, the app gained close to 1,000 users across ten countries organically via word of mouth. Rapid development is underway for Spring 2016 Android launch and full iOS release.

<http://maychildtechnologies.com/>

 **Google Incorporated** 2014, 2015 (summer)
Software Engineering Intern, Machine Intelligence
 Built an applied machine learning approach to predict Google Ad Exchange platform search ranking results.
<https://www.doubleclickbygoogle.com/solutions/digital-marketing/ad-exchange/>

Improved predictive neural network's visualizer by altering the underlying architecture to utilize Google Brain's deep learning technology. Resulted in enhanced traceability and debugability of approach.
<http://research.google.com/pubs/ArtificialIntelligenceandMachineLearning.html>



General Electric Global Research, San Ramon, CA 2013(summer)

R&D Intern, Mobility and Collaboration Lab

Wrote significant portions of Objective-C code included in official mobile application release.
<http://www.geglobalresearch.com/innovation/predix-software-platform-industrial-internet>



Intel Corporation, Bellevue, WA 2012(summer)

Software Intern Graduate Level

Developed Windows gadget application to alert software developers in real-time of status and updates concerning assigned bugs in Intel Clover Trail atom chip release.
<http://ark.intel.com/products/codename/53606/Cloverview>



AT&T Incorporated, St. Louis, MO 2011(summer)

Student Intern – Technical I

Created graphical interface for Java-based Application Resource Optimizer and demoed Agile accomplishments in bi-weekly retrospective for clients resulting in a \$1.2 million budget increase for further enhancements.
<https://developer.att.com/application-resource-optimizer>



Grace New Covenant Church, St. Louis, MO 2010(summer)

Administrative Intern

Served as general technology advisor. Responsible for the creation of the church website which has seen over 6,000+ unique visitors and showcases a high quality community presence and brand.
<http://www.gracenewcovenantchurch.org/>



Save-A-lot Corporate Headquarters, St. Louis, MO 2008, 2009(summer)

IT Department Intern

Responsible for testing and debugging of Java applications for a wide variety of usages.