

Denae M. Ford

DOCTORAL CANDIDATE · COMPUTER SCIENCE

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Using **human computer interaction** to understand **programming knowledge sharing** in **socio-technical ecosystems**

Education

North Carolina State University

PH.D. IN COMPUTER SCIENCE. EST. SPRING 2019

- Minor: Cognitive Science

Raleigh, NC

Aug. 2014 - Present

- Thesis Topic: *Dismantling Barriers to Participation: How Mentorship Can Support Programmer Engagement in Online Communities*
- Committee: Dr. Christopher Parnin(advisor), Dr. Christopher Mayhorn, Dr. Kathryn Stolee, Dr. Tiffany Barnes, Dr. James Herbsleb

North Carolina State University

M.S. IN COMPUTER SCIENCE

Raleigh, NC

Aug. 2014 - Dec 2016

North Carolina State University

B.S. IN COMPUTER SCIENCE

- Magna Cum Laude

Raleigh, NC

Aug. 2010 - May 2014

Technical Skills

Programming Python, R, Java, LaTeX, HTML, MATLAB, SQL, C/C++

Empirical Methods Mixed Methods, Qualitative & Quantitative Analysis, Grounded Theory, Experimental Research Design

Publications

Dazed: Measuring the Cognitive Load of Solving Technical Interview Problems At the Whiteboard

ICSE 2018

BEHROOZI, M., LUI, A., MOORE, I., **FORD, D.**, PARNIN, C.

- [To appear] IEEE 40th International Conference on Software Engineering, NIER Track

“We Don’t Do That Here”: How Collaborative Editing with Mentors Improves Engagement in Social Q&A Communities

CHI 2018

FORD, D., LUSTIG, K., BANKS, J., PARNIN, C.

- [To appear] ACM Conference on Human Factors in Computing Systems

Selfies as Social Movements: Influences on Participation and Perceived Impact on Stereotypes

CSCW 2018

LIU, F., **FORD, D.**, PARNIN, C., DABBISH, L.

- [To appear] ACM Conference on Computer-Supported Cooperative Work and Social Computing

Someone Like Me: How Does Peer Parity Influence Participation of Women on Stack Overflow?

VL/HCC 2017

FORD, D., HARKINS, A., PARNIN, C.

- IEEE Symposium on Visual Languages and Human-Centric Computing

Using Eye Tracking to Identify Features of Peer Parity on Stack Overflow

VL/HCC 2017

FORD, D.

- IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC) Graduate Consortium
Characterizing Software Engineering Work with Personas Based on Knowledge Worker Actions

ESEM 2017

FORD, D., ZIMMERMANN, T., BIRD, C., NAGAPPAN, N.

- IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM)

The Tech-Talk Balance: What Technical Interviewers Expect from Technical Candidates

[ICSE] CHASE 2017

FORD, D., BARIK, T., RAND-PICKETT, L., PARNIN, C.

- IEEE ICSE 10th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE)

Recognizing Gender Differences in Stack Overflow Usage: Applying the Bechdel Test

VL/HCC 2016

FORD, D.

- IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC) Graduate Consortium

Paradise Unplugged: Identifying Barriers for Female Participation on Stack Overflow

FSE 2016

FORD, D., SMITH, J., GUO, P.J., PARNIN, C.

- ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)

What We Have Here is a Failure to Communicate! A Cross-Tool Study on Program Analysis

FSE 2016

Tool Notifications

JOHNSON, B., PANDITA R., SMITH J., FORD, D., ELDER, S., MURPHY-HILL, E., HECKMAN S., SADOWSKI, C.

- ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)

Studying Sustained Attention and Cognitive States in Remote Technical Interviews

[ICER] EMIP 2015

FORD, D., BARIK, T., PARNIN, C.

- ACM ICER 3rd International Workshop on Eye Movements in Programming (EMIP)

[Best Presentation Award]

Exploring the Causes of Frustration for Software Developers

[ICSE] CHASE 2015

FORD, D., PARNIN, C.

- IEEE ICSE 8th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE)

Experience

RESEARCH

Microsoft Research

Redmond, WA

RESEARCH IN SOFTWARE ENGINEERING GROUP INTERN

May 2016 - Aug. 2016

- Researching differences and similarities between knowledge workers and software engineers
- Determining detailed description of knowledge worker actions to adapt to software engineers
- Conducted interview and surveys to identify software engineering personas
- Presented personas of software engineers internally and prepared conference publication

North Carolina State University

Raleigh, NC

GRADUATE RESEARCH ASSISTANT

Aug. 2015 - May 2016

- Researched socio-technical ecosystems and how knowledge is shared amongst software engineers
- Conducted qualitative and quantitative empirical studies to better understand the users of the community
- Collaborated with researches from Carnegie Mellon University and University of Rochester and learned varied approaches to studying similar problems
- Presented findings at international conferences for software engineering and biometrics of programming

MIT Lincoln Laboratory

Lexington, MA

BIOENGINEERING SYSTEMS AND TECHNOLOGIES INTERN

Jun. 2015 - Aug. 2015

- NICL (Neural Indicators of Connectivity and Learning) Project
- Developed eye characterization tool to analyze pupil dilation, saccades, and fixations using Python
- Conducted pilot study with both spatial & rotational cognitive tasks to identify learning styles
- Eye characterization tool to be combined with EEG for full evaluation of learning
- Attended GEM Conference on behalf of MITLL to discuss research opportunity

MIT Lincoln Laboratory

Lexington, MA

INFORMATICS AND DECISION SUPPORT RESEARCH INTERN

Jun. 2014 - Aug. 2014

- SIGMA (Scalable Integration of Geo Dispersed Monitoring Assets) Project
- Implemented decision support and advisory services feature into video monitoring tool
- Conducted pilot study to determine which recommendations were ideal for video operators
- Integrated perspectives of Human Factors and Software Engineering to make responsive tool

North Carolina State University

Raleigh, NC

UNDERGRADUATE RESEARCH ASSISTANT

Aug. 2012 - Oct. 2013

- Center for Educational Informatics: JavaTutor Project (Advisor: Dr. Kristy Boyer)
- An intelligent tutoring system to teach students computational thinking through Java
- Analyzing linguistics from multifaceted data including facial expressions and body posture
- Performed analysis of galvanic skin response to determine engagement of participants

DEVELOPMENT

SAS Institute

Cary, NC

DEVELOPMENT TESTING INTERN

May 2013 - Aug. 2013

- Collaborated on testing strategies with a team from Beijing, China
- Implemented tests to measure performance of Scalable Performance Data Server (SPDS)
- Authored Cloudera Hadoop Custom Sequence Reader and Writer for Embedded Processes (EP)
- Optimized documentation creating internal wiki sites

Lexmark International

FIRMWARE-SOFTWARE STUDENT INTERN

Lexington, KY
Jun. 2012 - Aug. 2012

- Team programmed to develop software with a team from the Philippines
- Designed and implemented software traversal tool with expandable testing capabilities
- Performed demos and to present functionalities and progress to superiors
- Agile scrum team member, responsible for tasks with testing new software architecture

Invited Talks

Paradise Unplugged: How We Create a More Empathetic and Helpful Online Community

COMCAST SOFTWARE AS CRAFT CONFERENCE

Keynote Speaker

Philadelphia, PA

Oct. 2017

Eating Your Donuts and Basking in Your Glow

DIAMOND HACKS HACKATHON

Keynote Speaker

Raleigh, NC

Sep. 2017

How Barriers and Identity Influence Participation in Programming Communities

MICROSOFT RESEARCH

Cambridge, UK

Sep. 2016

Identifying Personas of Software Engineers as Knowledge Workers

MICROSOFT RESEARCH

Redmond, WA

Aug. 2016

NICL: Exploring Pupillometry in Cognitive Tasks

MIT LL SUMMER RESEARCH PRESENTATION

Lexington, MA

Aug. 2015

SIGMA: Advisory Services Notifications System

MIT LL SUMMER RESEARCH PRESENTATION

Lexington, MA

Aug. 2014

Interesting Projects

Stack Overflow Mentorship Program

GRADUATE RESEARCH PROJECT

Summer 2017 - PRESENT

- Successfully implemented a mentorship program with Stack Overflow
- Studying the longitudinal effects of engagement following participation
- Paper under review : [\[Wrap Up Post\]](#) [\[Podcast\]](#)

Barriers to Participation on Stack Overflow

GRADUATE RESEARCH PROJECT

Spring 2015 - Fall 2017

- Identified barriers of participation for women and men on Stack Overflow
- Defined how *peer parity* and identity can influence participation

Evaluating the Cognitive Burden of Technical Interviews with Biometric Sensing

GRADUATE RESEARCH PROJECT

Fall 2015 - PRESENT

- Compared technical knowledge sharing during remote programming interviews
- Analyzed the interviewer perspective on technical programming interviews

Identity Based Movements: Community Support and Impact through Selfies

GRADUATE RESEARCH PROJECT

Fall 2015 - SPRING 2017

- Interviewed participants of #iLookLikeAnEngineer, an identity based hashtag movement

Teaching Experiences

Snap It! Craft It! Print It! Coding Camp

NC STATE: COLLEGE OF ENGINEERING

Raleigh, NC

Jul. 2017

- As lead instructor, prepared and presented materials for the week long interactive course

Data Science and Visualization Institute for Librarians: Preparing Data for Qualitative Analysis

Raleigh, NC

NC STATE LIBRARY

Apr. 2017

- Prepared and presented material to explain how to use qualitative analysis tools such as ATLAS.ti, NVivo, and RStudio [Course Materials]

Think and Do Qualitative Research and R with Denae Ford

Raleigh, NC

NC STATE LIBRARY

Nov. 2016

- Prepared and presented material to explain how to use R to for large scale survey analysis [Course Materials]

The Science Of Technical Interviews: What To Expect And How To Succeed

Raleigh, NC

NC STATE GRADUATE SOFTWARE ENGINEERING COURSE

Oct. 2016

- Prepared and presented lecture of University Graduate Software Engineering course

Preparing for the Technical Interview

Raleigh, NC

NC STATE UNDERGRADUATE SOFTWARE ENGINEERING COURSE

Apr. 2015

- Prepared and presented lecture of University Undergraduate Software Engineering course

INSPIRE: Young Girls interested in Technology

Kingtree, SC

INTECH CAMP

Sep. 2015

- Team taught an introductory HTML+CSS course to middle school girls

Research Students Mentored

- Alisse Harkins** Project: Defining Peer Parity among Women on Stack Overflow (Now at Microsoft)
Savannah Morgan Project: How Programming Questions from Women are Received on Stack Overflow

Honors & Awards

- 2018 **Grad Cohort Scholarship Recipient**, Computing Research Association - URMD
2018 **Invited Participant**, University of Notre Dame: NextProf Workshop
2017 **Invited Participant**, University of Michigan: NextProf Workshop
2017 **Travel Scholarship Recipient**, National Society of Blacks in Computing
2017 **Travel Scholarship Recipient**, Black Women In Computing Conference
2016 **Recipient**, NSF Graduate Research Fellowship Program
2016 **Recipient**, Microsoft Research PhD Fellowship
2015 **Recipient**, Xerox Technical Minority Scholarship
2014 **Recipient**, National GEM Consortium Fellowship
2014 **Recipient**, North Carolina State University Graduate Fellowship
2016 **Grad Cohort Scholarship Recipient**, Computing Research Association - W
2012 **Travel Scholarship Recipient**, Facebook Grace Hopper Scholar
2010-2014 **ACC Academic Honor Roll**, NCSU Varsity Scholar Student-Athlete

Service

RESEARCH PROGRAM & ORGANIZING COMMITTEES

- 2017 **Reviewer**, ICSE FairWare Program Committee Gothenberg, SW
2017 **Manuscript Reviewer**, IEEE Transactions in Software Engineering(TSE) Journal
2017 **Poster Reviewer**, NSF NC-LSAMP Annual Undergraduate Research Conference Raleigh, NC
2017 **Reviewer**, ICPC [Industry] Program Committee Buenos Aires, AR
2016 **Student Volunteer**, ICSME Organizing Committee Raleigh, NC
2016 **Reviewer**, ICSME [Tool] Program Committee Raleigh, NC
2016 **Social Media Chair**, VISSOFT Organizing Committee Raleigh, NC
2015 **Poster Reviewer**, NSF NC-LSAMP Annual Undergraduate Research Conference Pembroke, NC

ORGANIZATIONS

- 2017 **Graduate Chair**, NCSU Computer Steering Committee *Raleigh, NC*
- 2017 **Lead Camp Counselor**, INTech Camp for Girls *Raleigh, NC*
- 2016 **IMSD Ambassador**, NCSU Initiative for Maximizing Student Diversity (IMSD) *Raleigh, NC*
- 2016 **Panelist + Instructor**, INTech Camp for Girls *Kingstree, SC*
- 2015 - **Member**, Association for Computing Machinery (ACM) *Raleigh, NC*
- 2015 - **Member**, Institute of Electrical and Electronics Engineers (IEEE) *Raleigh, NC*
- 2014 - **Vice President, Former Member**, Minority Engineering Graduate Student Association (MEGSA) *Raleigh, NC*
- 2011 - **Graduate Advisor, Former Vice President, Former Publicity Chair**, Women In Computer Science *Raleigh, NC*