

Denae M. Ford

DOCTORAL CANDIDATE · COMPUTER SCIENCE

Department of Computer Science · College of Engineering
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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

- 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

North Carolina State University

B.S. IN COMPUTER SCIENCE

- Magna Cum Laude

Raleigh, NC

Aug. 2014 - Present

Raleigh, NC

Aug. 2014 - Dec. 2016

Raleigh, NC

Aug. 2010 - May 2014

Fellowships

Total Awarded: \$275,000

\$141,000 National Science Foundation(NSF) Graduate Research Fellowship Program, 2016-2020

\$88,000 Microsoft Research Ph.D. Fellowship, 2016-2018

\$4,000 North Carolina State University Graduate Fellowship, 2014

\$42,000 National GEM Consortium Fellowship, 2014-2019

Publications

CONFERENCE PAPERS [PEER-REVIEWED]

Beyond the Code Itself: How Programmers Really Look at Pull Requests

ICSE SEIS 2019

FORD, D., BEHROOZI, M., SEREBRENIK, A., PARNIN, C.

- [To Appear] 41st ACM/IEEE International Conference on Software Engineering (ICSE), SEIS Track

How Should Compilers Explain Problems to Developers?

ESEC/FSE 2018

BARIK, T., FORD, D., MURPHY-HILL, E., PARNIN, C.

- ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)

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

ICSE NIER 2018

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

- IEEE 40th International Conference on Software Engineering (ICSE), 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.

- 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.

- 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

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)

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 Tool Notifications

FSE 2016

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)

WORKSHOP + CONSORTIUM PAPERS [PEER-REVIEWED]

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

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

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

Facebook Research

Menlo Park, CA

COMMUNITY INTEGRITY RESEARCH INTERN

May 2018 - Aug. 2018

- Community Integrity Research Team - Actor Experience Group
- Conducted experiments on how presentations of norms and exemplars can encourage user engagement
- Connected with faculty at Harvard University to compare and expanding findings from other online communities
- Presented findings to international development, policy, and growth teams determine how to integrate interventions in London and Menlo Park

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 among software engineers
- Conducted qualitative and quantitative empirical studies to better understand the users of the community
- Collaborated with researchers from Carnegie Mellon University and University of Rochester to learn varied approaches for studying similar problems
- Presented findings at international conferences for software engineering and biometrics of programming

MIT Lincoln Laboratory

BIOENGINEERING SYSTEMS AND TECHNOLOGIES INTERN

- 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 a full evaluation of learning
- Attended GEM Conference on behalf of MITLL to discuss research opportunity

Lexington, MA

Jun. 2015 - Aug. 2015

MIT Lincoln Laboratory

INFORMATICS AND DECISION SUPPORT RESEARCH INTERN

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

Lexington, MA

Jun. 2014 - Aug. 2014

North Carolina State University

UNDERGRADUATE RESEARCH ASSISTANT

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

Raleigh, NC

Aug. 2012 - Oct. 2013

DEVELOPMENT

SAS Institute

DEVELOPMENT TESTING INTERN

- 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

Cary, NC

May 2013 - Aug. 2013

Lexmark International

FIRMWARE-SOFTWARE STUDENT INTERN

- 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

Lexington, KY

Jun. 2012 - Aug. 2012

Invited Talks

Invited Guest Lecture

GEORGE MASON UNIVERSITY

Software Engineering Seminar Series

Fairfax, VA

Dec. 2018

Invited Guest Lecture

UNIVERSITY OF MASSACHUSETTS AMHERST

Rising Star in Computer Science Seminar Series

Amherst, MA

Nov. 2018

Using Participatory Design with Previous Posts and Norms to Educate Actors on Community Standards

FACEBOOK RESEARCH

Summer Research Presentation

London, UK

Aug. 2018

Challenging Online Communities to Recreate Onboarding Experiences

WELLESLEY COLLEGE

Wellesley, MA

April 2018

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

Summer Research Presentation

Redmond, WA

Aug. 2016

NICL: Exploring Pupillometry in Cognitive Tasks

MIT LINCOLN LABORATORY

Summer Research Presentation

Lexington, MA

Aug. 2015

SIGMA: Advisory Services Notifications System

MIT LINCOLN LABORATORY

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
- Supplementary Materials : [\[Wrap Up Post\]](#) [\[Podcast\]](#)

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 #ilLookLikeAnEngineer, 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

NC STATE UNIVERSITY LIBRARIES

Raleigh, NC

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 Denaë Ford

NC STATE UNIVERSITY LIBRARIES

Raleigh, NC

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

NC STATE GRADUATE SOFTWARE ENGINEERING COURSE

Raleigh, NC

Oct. 2016

- Prepared and presented lecture of University Graduate Software Engineering course

Preparing for the Technical Interview

NC STATE UNDERGRADUATE SOFTWARE ENGINEERING COURSE

Raleigh, NC

Apr. 2015

- Prepared and presented lecture of University Undergraduate Software Engineering course

INSPIRE: Young Girls interested in Technology

INTECH CAMP

Kingstree, SC

Sep. 2015

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

Technical Skills

Programming Python, R, Java, LaTeX, HTML, MATLAB, SQL, C/C++
Empirical Methods Mixed Methods, Qualitative & Quantitative Analysis, Grounded Theory, Experimental Research Design

Research Students Mentored

Kayla Mumford Project: Analyzing AOI Triggers for Contribution Signals on GitHub
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 (Now in Peace Corps.)

Honors & Awards

2018 **Fellow**, BlackComputeHER Fellowship Program *Atlanta, GA*
2018 **Recipient**, ACM SIGCHI Student Travel Grant - CSCW *New York, NY*
2018 **Grad Cohort Scholarship Recipient**, Computing Research Association - URMD *San Diego, CA*
2018 **Invited Participant**, University of Notre Dame: NextProf Workshop *South Bend, IN*
2017 **Invited Participant**, University of Michigan: NextProf Workshop *Ann Arbor, MI*
2017 **Travel Scholarship Recipient**, National Society of Blacks in Computing *Atlanta, GA*
2017 **Travel Scholarship Recipient**, Black Women In Computing Conference *Washington, DC*
2016 **Grad Cohort Scholarship Recipient**, Computing Research Association - W *San Diego, CA*
2014 **Fellow**, NSF Graduate Research Fellowship Program *Raleigh, NC*
2016 **Fellow**, Microsoft Research Ph.D. Fellowship Program *Raleigh, NC*
2015 **Recipient**, Xerox Technical Minority Scholarship *Raleigh, NC*
2015 **Best Presentation Award**, ICER EMIP *Joensuu, Finland*
2014 **Fellow**, National GEM Consortium Fellowship Program *Raleigh, NC*
2012 **Travel Scholarship Recipient**, Facebook Grace Hopper Scholar *Houston, TX*
2010-2014 **ACC Academic Honor Roll**, NCSU Varsity Scholar Student-Athlete *Raleigh, NC*

Service

RESEARCH PROGRAM & ORGANIZING COMMITTEES

2019 **Reviewer**, ACM CHI *Glasgow, UK*
2019 **Reviewer**, ACM/IEEE ICSE [Demonstrations] Program Committee *Montréal, CA*
2019 **Reviewer**, ACM/IEEE ICSE MSR [Mining Challenge] Program Committee *Montréal, CA*
2018 **Reviewer**, ACM CSCW *New York, NY*
2018 **Reviewer**, IEEE 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**, IEEE ICPC [Industry] Program Committee *Buenos Aires, AR*
2016 **Student Volunteer**, IEEE ICSME Organizing Committee *Raleigh, NC*
2016 **Reviewer**, IEEE ICSME [Tool] Program Committee *Raleigh, NC*
2016 **Social Media Chair**, IEEE VISSOFT Organizing Committee *Raleigh, NC*
2015 **Poster Reviewer**, NSF NC-LSAMP Annual Undergraduate Research Conference *Pembroke, NC*

ORGANIZATIONS

2018 **Graduate Student Representative**, NCSU Computer Science Department Head Search Committee *Raleigh, NC*
2018 **Board of Directors Member**, INTech Camp for Girls
2018 **Mentor**, The GradSpark Accelerator
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*
2018 - **Member**, Association for the Advancement of Artificial Intelligence (AAAI) *Raleigh, NC*
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*

References

Dr. Christopher Parnin

Assistant Professor

North Carolina State University

Email: cjparnin@ncsu.edu

Website: <http://chrisparnin.me/>

Dr. James Herbsleb

Director of PhD Program in Societal Computing and Full Professor

Carnegie Mellon University

Email: jdh@cs.cmu.edu

Website: <http://herbsleb.org/>

Dr. Margaret Burnett

Distinguished Professor

Oregon State University

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Dr. Thomas Zimmermann

Senior Researcher

Microsoft Research

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Dr. Philip Guo

Assistant Professor

University of California San Diego

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