

# Nicholas NELSON

## PhD Student, Computer Science | Software Developer

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PhD student in Computer Science focusing on software engineering (SE), human-computer interaction (HCI), user interfaces, and developer tools. I am exploring the effects of human problem-solving processes on the use of integrated development environments (IDEs). I also conduct research into software development processes such as merge conflicts, continuous integration (CI), and test-driven development (TDD). I have experience using TypeScript, Java, CSS, C/C++, SQL, Python, PHP, JSON, and R.

## EDUCATION

- 2015–Current **Ph.D** in Computer Science at Oregon State University (Advisor: Anita Sarma)
- 2015 **B.S.** in Computer Science at Oregon State University (Minor: Business & Entrepreneurship)
- 2008 **A.S.** in Computer Information Systems at Portland Community College
- 2008 **A.S.** in General Studies at Portland Community College
- 2003 **H.S. Diploma** at South Albany High School

## EMPLOYMENT

- Present**  
**September 2015** **Graduate Research & Teaching Assistant, OREGON STATE UNIVERSITY, USA**
  - Developed architecture and platform for a highly-configurable context-oriented IDE.
  - Conducted empirical research into cognitive processes of problem-solving and context management during software development.
  - Conducted research into developer perceptions of software merge conflict processes and tools.
  - Developed IntelliJ Idea plugin to analyze and refactor Android Java code written for API 6/7 security to use API 8 runtime permissions.
  - Assisted with research into developer perceptions of Continuous Integration (CI) practices and tools.
  - Reviewed submitted manuscripts for prominent software engineering conferences.

Typescript Javascript React Redux jQuery CSS NodeJS LaTeX IntelliJ Idea Git Maven Gradle Groovy

Android Studio Android 8 API TravisCI Jenkins JSON R RStudio Haskell Idris Prolog
- September 2019**  
**June 2019** **Research Intern – Program Synthesis, MICROSOFT CORPORATION, USA**
  - Developed an interactive grid component for tabular data in JupyterLab interactive notebooks.
  - Combined program synthesis by example techniques for interactive data analysis and formatting.
  - Evaluated ambient data understanding of the grid component through empirical user studies.

Typescript React Python JupyterLab CSS Visual Studio Code
- September 2015**  
**March 2014** **Undergraduate Research Assistant, OREGON STATE UNIVERSITY, USA**
  - Member of Change-Oriented Programming Environment (COPE) research group.
  - Assisted with research into predictive code analysis and visualization of Test-Driven Development (TDD) developer processes.

Java IntelliJ Idea Git Maven LaTeX Eclipse R RStudio Ninja Framework Ruby Python XML
- March 2014**  
**September 2013** **Undergraduate Teaching Assistant, OREGON STATE UNIVERSITY, USA**
  - Instructed recitation labs for 30–40 freshman and sophomore computer science students enrolled in Computer Science Orientation (CS160), Introduction to Computer Science I (CS161), and Introduction to Computer Science II (CS162) courses.
  - Developed training and evaluation material for new teaching assistants.

Python Java C/C++ PyCharm IntelliJ Idea
- September 2013**  
**June 2013** **Process Engineering Intern, HEWLETT PACKARD ENTERPRISE, USA**
  - Member of PPS - Inkjet High-Speed Production Solutions (IHPS) division.
  - Designed, proposed, and implemented warranty processing and validation code for HP Web Press consumable products.
  - Integrated file code with HP Web Press Dashboard web applications.

Python PHP Perl Bash

December 2012 April 2010	<b>System Analyst I, SAMARITAN HEALTH SERVICES, USA</b> <ul style="list-style-type: none"> <li>Member of Information Services (IS) division.</li> <li>Provided technical support, evaluation, deployment, maintenance, project management, and sunset strategizing for 85 enterprise software applications.</li> <li>Maintained primary application support for 30 enterprise applications, including 24/7 support during on-call rotations.</li> </ul> <div> <span>Oracle SQL</span> <span>MySQL</span> <span>PostgreSQL</span> <span>Microsoft Windows Server</span> <span>Bomgar Remote Access</span> <span>Schlage Lock Control Software</span> </div> <div> <span>ViewPAK Boiler System</span> <span>Microsoft SharePoint</span> <span>Microsoft Active Directory</span> </div>
April 2010 July 2008	<b>Help Desk Analyst, SAMARITAN HEALTH SERVICES, USA</b> <ul style="list-style-type: none"> <li>Member of Information Services (IS) division.</li> <li>Provided technical support for 7,000 healthcare employees.</li> <li>Maintained a 99% yearly customer satisfaction rating.</li> <li>Answered 13,000 phone calls and 7,000 support emails per year.</li> </ul> <div> <span>BMC Remedy Service Management</span> <span>Polycom Teleconference</span> <span>LogMeIn Remote Control</span> </div>
July 2008 October 2007	<b>UNIX Server Operations Intern, INTEL CORPORATION, USA</b> <ul style="list-style-type: none"> <li>Developed interactive web applications for server systems rack polling and management.</li> <li>Supported 6,000 production and test UNIX/Linux servers in active use by engineers and developers.</li> <li>Maintained operational security for 700 highly secure hardened UNIX/Linux servers co-located in secure global facilities.</li> </ul> <div> <span>ColdFusion</span> <span>PHP</span> <span>Java</span> <span>Python</span> <span>Perl</span> </div>
October 2007 May 2007	<b>Engineering Computing Support Intern, INTEL CORPORATION, USA</b> <ul style="list-style-type: none"> <li>Provided technical support for 19,000 Engineering and Product Development employees.</li> <li>Supported 160+ enterprise software products across 14 different global sites.</li> <li>Developed SQL queries and reports for weekly and monthly support statistics.</li> </ul> <div> <span>BMC Remedy Service Management</span> <span>TrueWindow Remote Access Control</span> <span>Microsoft Active Directory</span> </div>

## PEER-REVIEWED PUBLICATIONS

\* co-first author.

- [10] Marjan Adeli, **Nicholas Nelson**, Souti Chattopadhyay, Hayden Coffey, Austin Henley, and Anita Sarma. *Supporting Code Comprehension via Annotations: Right Information at the Right Time and Place*. Proceedings of the IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC'20), August 2020.
- [9] Souti Chattopadhyay, **Nicholas Nelson**, Audrey Au, Natalia Morales, Christopher Sanchez, Rahul Pandita, and Anita Sarma. *A Tale from the Trenches: Cognitive Biases and Software Development*. Proceedings of the ACM/IEEE International Conference on Software Engineering (ICSE'20), July 2020. Acceptance ratio: 20.9% (129/617). 🏆 **ACM SIGSOFT Distinguished Paper Award**.
- [8] Souti Chattopadhyay, **Nicholas Nelson**, Yenifer Ramirez Gonzalez, Annel Amelia Leon, Rahul Pandita, and Anita Sarma. *Latent Patterns in Activities: A Field Study of How Developers Manage Context*. Proceedings of the ACM/IEEE International Conference on Software Engineering (ICSE'19), May 2019. Acceptance ratio: 20.6% (109/529).
- [7] **Nicholas Nelson**, Caius Brindescu, Shane McKee, Anita Sarma, and Danny Dig. *The Life-Cycle of Merge Conflicts: Processes, Barriers, and Strategies*. Empirical Software Engineering Journal (EMSE), February 2019.
- [6] Souti Chattopadhyay, **Nicholas Nelson**, Thien Nam, McKenzie Calvert, and Anita Sarma. *Context in Programming: An Investigation of How Programmers Create Context*. Proceedings of the IEEE ICSE Workshop on Cooperative and Human Aspects of Software Engineering (CHASE'18), May 2018.
- [5] Shane McKee\*, **Nicholas Nelson\***, Anita Sarma, and Danny Dig. *Software Practitioner Perspectives on Merge Conflicts and Resolutions*. Proceedings of IEEE International Conference on Software Maintenance and Evolution (ICSME'17), Sep 2017. Acceptance ratio: 27.8% (42/151). 🏆 **IEEE TCSE Distinguished Paper Award**.
- [4] Michael Hilton, **Nicholas Nelson**, Timothy Tunnell, Darko Marinov, and Danny Dig. *Trade-offs in Continuous Integration: Assurance, Security, and Flexibility*. Proceedings of ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE'17), Sep 2017. Acceptance ratio: 24.4% (72/295). 🏆 **ACM SIGSOFT Distinguished Paper Award**.
- [3] **Nicholas Nelson**, Anita Sarma, and André van der Hoek. *Towards an IDE to Support Programming as Problem-Solving*. Proceedings of the Psychology of Programming Interest Group Workshop (PPIG'17), Jul 2017. Acceptance ratio: 84.0% (21/25).
- [2] **Nicholas Nelson**. *Problem-Solving Applications in Developer Environments*. pages 179–180. Proceedings of the Psychology of Programming Interest Group Workshop (PPIG'17), Jul 2017. Acceptance ratio: 90.0% (9/10).

- [1] Michael Hilton, **Nicholas Nelson**, Hugh McDonald, Sean McDonald, Ron Metoyer, and Danny Dig. *TDDViz: Using Software Changes to Understand Conformance to Test Driven Development*. pages 53–65. Proceedings of the International Conference on Agile Processes, in Software Engineering, and Extreme Programming (XP'16), May 2016. Acceptance ratio: 33.3% (14/42).

## LANGUAGES

English	●	●	●	●	●
Spanish	●	●	○	○	○
German	●	●	○	○	○
Mandarin	●	○	○	○	○
Japanese	●	○	○	○	○

## AWARDS

- > ACM SIGSOFT CAPS Travel Support Award at ICSE'19
- > Honorable Mention Award for OSU EECS Graduate Students 2018–2019
- > IEEE TCSE Distinguished Paper Award at ICSME'17
- > ACM SIGSOFT Distinguished Paper Award at FSE'17
- > Honor Roll at OSU for Winter'15, Fall'14, Winter'14, Spring'14
- > President's List at PCC for Spring'08
- > Dean's List at PCC for Winter'08, Fall'07, Winter'07

## SERVICE

2020	<p><b>PC Member, 16TH INTERNATIONAL CONFERENCE ON PREDICTIVE MODELS AND DATA ANALYTICS IN SOFTWARE ENGINEERING, REPLICATION CHALLENGE TRACK</b> Sacramento, California, USA</p> <p><b>Reviewer, IEEE TRANSACTIONS ON SOFTWARE ENGINEERING (TSE)</b> Journal</p> <p><b>Graduate Student Representative, EECS GRADUATE CURRICULUM COMMITTEE</b> School of EECS, Oregon State University, Corvallis, Oregon, USA</p> <p><b>Sub-Reviewer, 28TH ACM JOINT EUROPEAN SOFTWARE ENGINEERING CONFERENCE AND SYMPOSIUM ON THE FOUNDATIONS OF SOFTWARE ENGINEERING (ESEC/FSE 2020)</b> Sacramento, California, USA</p> <p><b>Reviewer, EMPIRICAL SOFTWARE ENGINEERING (EMSE)</b> Journal</p> <p><b>Sub-Reviewer, 28TH IEEE/ACM INTERNATIONAL CONFERENCE ON PROGRAM COMPREHENSION (ICPC 2020)</b> Seoul, South Korea</p>
2019	<p><b>Student Volunteer, 41ST ACM/IEEE INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING (ICSE 2019)</b> Montreal, Canada</p> <p><b>Sub-Reviewer, 20TH IEEE SYMPOSIUM ON VISUAL LANGUAGES &amp; HUMAN-CENTRIC COMPUTING (VL/HCC 2019)</b> Memphis, Tennessee, USA</p> <p><b>Sub-Reviewer, 27TH ACM JOINT EUROPEAN SOFTWARE ENGINEERING CONFERENCE AND SYMPOSIUM ON THE FOUNDATIONS OF SOFTWARE ENGINEERING (ESEC/FSE 2019)</b> Tallinn, Estonia</p> <p><b>Sub-Reviewer, 34TH IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE 2019)</b> San Diego, California, USA</p>
2018	<p><b>Sub-Reviewer, 33RD IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE 2018)</b> Montpellier, France</p>
2016–2018	<p><b>Steward, COALITION OF GRADUATE EMPLOYEES LOCAL 6069 (AFT, AFL-CIO), USA</b></p> <ul style="list-style-type: none"> <li>&gt; Graduate employee representative for Electrical Engineering and Computer Science (EECS).</li> </ul>
2017	<p><b>Video Game Workshop Lead, CHICKTECH CORVALLIS, USA</b></p> <ul style="list-style-type: none"> <li>&gt; Developed instructional material for 2017 ChickTech Corvallis Annual Summer Kickoff Event for 200–300 high school girls interested in science and technology.</li> </ul> <p><b>Sub-Reviewer, 32ND IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE 2017)</b> Urbana-Champaign, Illinois, USA</p> <p><b>Sub-Reviewer, 30TH ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY (UIST 2017)</b> Quebec City, Canada</p> <p><b>Sub-Reviewer, 14TH INTERNATIONAL CONFERENCE ON MINING SOFTWARE REPOSITORIES (MSR 2017)</b> Buenos Aires, Argentina</p>
2015	<p><b>Sub-Reviewer, 30TH IEEE/ACM INTERNATIONAL CONFERENCE ON AUTOMATED SOFTWARE ENGINEERING (ASE 2015)</b> Lincoln, Nebraska, USA</p>

## REFERENCES

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### **Dr. Anita Sarma**

*Associate Professor, Computer Science*

OREGON STATE UNIVERSITY

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### **Dr. Michael Hilton**

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