Nicholas **Nelson**

SOFTWARE ENGINEER · HCI RESEARCHER

Portland, Oregon, United States of AMERICA

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Skills

Programming	TypeScript, Node.js, Python, Java/Kotlin, C/C++, Ruby, PHP, R, LaTeX
DevOps	Webpack, Jest, Cypress, GitHub Actions, TravisCI, Jenkins, Vagrant
Back-end	Chromium/Electron, Rails, MySQL, PostgreSQL, REST API
Front-end	Redux, React, HTML5, Bootstrap, LESS, CSS
Languages	English, Spanish, German

Education

Oregon State University
Corvallis, Oregon, USA

PH.D. IN COMPUTER SCIENCE — *Sep. 2015 - Jun. 2023*

- Received Honorable Mention Award for 2018-2019 graduate students providing teaching services in EECS Dept.

Oregon State University
Corvallis, Oregon, USA

B.S. IN COMPUTER SCIENCE — *Jan. 2012 - Aug. 2015*

- Earned Honor Roll designation for Spring 2014, Fall 2014, Winter 2014, and Winter 2015 terms for GPA 3.5+

Portland Community College
Portland, Oregon, USA

A.S. IN COMPUTER INFORMATION SYSTEMS — *Sep. 2007 - Dec. 2008*

- Earned President's List designation for Spring 2008 term for GPA 3.8+
- Earned Dean's List designation for Fall 2007, Winter 2007, and Winter 2008 terms for GPA 3.5+

Work Experience

Oregon State University
Corvallis, Oregon, USA

GRADUATE RESEARCH ASSISTANT — *Sept. 2015 - Current*

- Architect and lead developer of a context-oriented source-code editor utilizing Electron, Webpack, React, Redux, and TypeScript.
- Developed interactive visualizations of Git repositories for human-centric version control.
- Built fully automated CI/CD pipelines on TravisCI (later migrated to GitHub Actions) for cross-platform builds, packaging, and testing.
- Implemented an E2E (end-to-end) and unit-testing infrastructure in Cypress and Jest.
- Conducted empirical research into developer perceptions of software merge conflict processes, difficulties, and tools.
- Conducted empirical research into developer perceptions of CI (Continuous Integration) practices and tools.
- Reviewed submitted manuscripts for prominent software engineering conferences and journals.

UNDERGRADUATE RESEARCH ASSISTANT — *Mar. 2014 - Sept. 2015*

- Conducted research on static analysis of Java/Kotlin code for automated refactoring of Android apps to inject dynamic permissions handling code that complies with Android 6.0's run-time permissions model.
- Developed a Ruby on Rails web application for visualizing developer adherence to the TDD (Test-Driven Development) process.

Microsoft Corp.
Seattle, Washington, USA

RESEARCH INTERN — *Jun. 2019 - Sept. 2019*

- Developed an interactive grid component plugin for JupyterLab interactive notebooks using Python, TypeScript, and CSS.
- Combined PBE (programming by example) and static type-inferencing techniques to create data analysis and formatting pipeline.
- Conducted qualitative HCI (human-computer interactions) research into the cognitive processes of recognizing ambient data in grid components.

Hewlett Packard Enterprise
Corvallis, Oregon, USA

ENGINEERING INTERN — *Jun. 2013 - Sept. 2013*

- Designed, proposed, and implemented warranty claims processing sub-system using Python and PHP which was integrated into the HP Web Press Dashboard web application.
- Implemented RESTful API service for ingesting printer consumables telemetry data from Inkjet High-Speed Product Solutions (IHPS) industrial printers for warranty claims validation.

Samaritan Health Services
Corvallis, Oregon, USA

SYSTEMS ANALYST I — *Apr. 2010 - Dec. 2012*

- Provided technical support for 85 enterprise software applications deployed at various regional healthcare facilities including Schlage Industrial Lock Control, MySQL, PostgreSQL, and Polycom Teleconference System.
- Held primary application support role for 30 enterprise applications, including 24/7 support during on-call rotations.

Help Desk Analyst   *Jul. 2008 - Apr. 2010*
- Provided remote technical support for 7,000 healthcare employees at various regional healthcare facilities.
- Maintained a 99% yearly customer satisfaction rating for 3 consecutive years.

Intel Corp.   *Hillsboro, Oregon, USA*
Engineering Intern   *May 2007 - Jul. 2008*
- Developed a server rack polling and provisioning application for enterprise-scale rack management using PHP and ColdFusion.
- Maintained operational and software security for 700 co-located Linux/UNIX servers across 5 global regions.
- Supported 6,000 production and test Linux/UNIX servers in use by electrical engineers and software developers.
- Developed SQL queries for automated weekly and monthly report generation of Linux/UNIX server health analytics.

Publications

Journal Articles

Cognitive Biases in Software Development
Souti Chattopadhyay, Nicholas Nelson, Audrey Au, Natalia Morales, Christopher Sanchez, Rahul Pandita, Anita Sarma
Communications of the ACM 65.4 (Apr. 2022) pp. 115–122. 2022

The Life-Cycle of Merge Conflicts: Processes, Barriers, and Strategies
Nicholas Nelson, Caius Brindescu, Shane McKee, Anita Sarma, Danny Dig
Empirical Software Engineering Journal (EMSE) 24.5 (Feb. 2019) pp. 2863–2906. 2019

Conference Proceedings

Supporting Code Comprehension via Annotations: Right Information at the Right Time and Place
Marjan Adeli, Nicholas Nelson, Souti Chattopadhyay, Hayden Coffey, Austin Henley, Anita Sarma
IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2020), 2020, Dunedin, New Zealand

A Tale from the Trenches: Cognitive Biases and Software Development
Souti Chattopadhyay, Nicholas Nelson, Audrey Au, Natalia Morales, Christopher Sanchez, Rahul Pandita, Anita Sarma
42nd International Conference on Software Engineering (ICSE 2020), 2020, Seoul, South Korea

Latent Patterns in Activities: A Field Study of How Developers Manage Context
Souti Chattopadhyay, Nicholas Nelson, Yenifer Ramirez Gonzalez, Annel Amelia Leon, Rahul Pandita, Anita Sarma
41st International Conference on Software Engineering (ICSE 2019), 2019, Montréal, Quebec, Canada

Context in Programming: An Investigation of How Programmers Create Context
Souti Chattopadhyay, Nicholas Nelson, Thien Nam, McKenzie Calvert, Anita Sarma
11th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE 2018), 2018, Gothenburg, Sweden

Software Practitioner Perspectives on Merge Conflicts and Resolutions
Shane McKee*, Nicholas Nelson*, Anita Sarma, Danny Dig
33rd International Conference on Software Maintenance and Evolution (ICSME 2017), 2017, Shanghai, China

Trade-offs in Continuous Integration: Assurance, Security, and Flexibility
Shane McKee*, Nicholas Nelson*, Anita Sarma, Danny Dig
11th Joint Meeting on Foundations of Software Engineering (ESEC/FSE 2017), 2017, Paderborn, Germany

Problem-Solving Applications in Developer Environments
Nicholas Nelson
28th Annual Workshop of the Psychology of Programming Interest Group (PPIG 2017), 2017, Delft, The Netherlands

Towards an IDE to Support Programming as Problem-Solving
Nicholas Nelson, Anita Sarma, André Hoek
28th Annual Workshop of the Psychology of Programming Interest Group (PPIG 2017), 2017, Delft, The Netherlands

TDDViz: Using Software Changes to Understand Conformance to Test Driven Development
Michael Hilton, Nicholas Nelson, Hugh McDonald, Sean McDonald, Ron Metoyer, Danny Dig
17th International Conference on Agile Processes, in Software Engineering, and Extreme Programming (XP 2016), 2016, Edinburgh, United Kingdom

Honors & Awards

2020	**ACM SIGSOFT Distinguished Paper Award**, 42nd International Conference on Software Engineering (ICSE 2020)	*Seoul, S. Korea*
2019	**ACM SIGSOFT CAPS Travel Support Award**, 41st International Conference on Software Engineering (ICSE 2019)	*Montréal, QC, Canada*
2017	**IEEE TCSE Distinguished Paper Award**, 33rd International Conference on Software Maintenance and Evolution (ICSME 2017)	*Shanghai, China*
2017	**ACM SIGSOFT Distinguished Paper Award**, 11th Joint Meeting on Foundations of Software Engineering (ESEC/FSE 2017)	*Paderborn, Germany*

Teaching

Oregon State University *Corvallis, Oregon, USA*

GRADUATE TEACHING ASSISTANT *Jan. 2016 - Current*

- CS567: Laboratory Studies in Software Engineering and Human-Computer Interaction (Fall 2021)
- CS560: Data-Driven Software Engineering (Fall 2020)
- CS419/579: Usable Security (Winter 2020)
- CS362: Software Engineering II (Spring 2020, Spring 2022)
- CS361: Software Engineering I (Winter 2022, Fall 2017, Winter 2017, Winter 2016)
- CS344: Operating Systems I (Winter 2023, Fall 2022)

UNDERGRADUATE TEACHING ASSISTANT *Sep. 2013 - Jun. 2014*

- CS162: Introduction to Computer Science II (Winter 2013, Spring 2013)
- CS161: Introduction to Computer Science I (Spring 2014, Winter 2014, Fall 2012)
- CS160: Computer Science Orientation (Fall 2013)

Service

PROGRAM COMMITTEES

2020	**PC Member for Replication Challenge Track**, 16th International Conference on Predictive Models and Data Analytics in Software Engineering (PROMISE 2020)	*Sacramento, California, USA*

VOLUNTEER

2020	**Graduate Student Representation**, EECS Graduate Curriculum Committee, Oregon State University	*USA*
2019	**Student Volunteer**, 41st International Conference on Software Engineering (ICSE 2019)	*Canada*
2017	**Video Game Workshop Lead**, ChickTech Corvallis Annual Summer Kickoff Event	*USA*

PEER REVIEW

2023	**Reviewer**, ACM Transactions on Software Engineering and Methodology (TOSEM)	
2022	**Reviewer**, Empirical Software Engineering Journal (ESE)	
2020	**Reviewer**, IEEE Transactions on Software Engineering Journal (TSE)	
2020	**Reviewer**, Empirical Software Engineering Journal (ESE)	
2020	**Sub-Reviewer**, 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020)	*USA*
2020	**Sub-Reviewer**, 28th IEEE/ACM International Conference on Program Comprehension (ICPC 2020)	*South Korea*
2019	**Sub-Reviewer**, 34th IEEE/ACM International Conference on Automated Software Engineering (ASE 2019)	*USA*
2019	**Sub-Reviewer**, 27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2019)	*Estonia*
2019	**Sub-Reviewer**, IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2019)	*USA*
2018	**Sub-Reviewer**, 33rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2018)	*France*
2017	**Sub-Reviewer**, 14th International Conference on Mining Software Repositories (MSR 2017)	*Argentina*
2017	**Sub-Reviewer**, 30th Annual ACM Symposium on User Interface Software and Technology (UIST 2017)	*Canada*
2017	**Sub-Reviewer**, 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE 2017)	*USA*
2015	**Sub-Reviewer**, 3th IEEE/ACM International Conference on Automated Software Engineering (ASE 2015)	*USA*