

# ALANNAH OLESON

Ph.D. Candidate

I work toward a world where *everyone* can effectively and authentically interact with technology by contributing strategies to support inclusive design skill development within computing education.

## EDUCATION

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- 2018-present **University of Washington**, Seattle, WA, USA  
Ph.D. in Information Science  
Advisor: Amy J. Ko  
Thesis: *Integrating Inclusive Design and Computing Education*
- 2021 **University of Washington**, Seattle, WA, USA  
M.S. in Information Science  
Advisor: Amy J. Ko  
General Exam Topic: *Toward Justice-Centered Software Design and Development*
- 2014-2018 **Oregon State University**, Corvallis, OR, USA  
Honors B.S. in Computer Science  
Advisor: Margaret Burnett  
Thesis: *Pedagogical Content Knowledge for Teaching Inclusive Software Design*

## RESEARCH EXPERIENCE

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- 2018-present **UW Code & Cognition Lab**, Graduate Research Assistant.  
Mentor: Amy J. Ko
- 2017-2018 **Adobe Research Creative Intelligence Lab**, Procedural Imaging Group Intern.  
Mentors: Cynthia (Jingwan) Lu, Jose Echevarria, Radomir Mech  
*Designed, conducted formative user research for, implemented, and presented a proof-of-concept augmented reality (AR) guided selfie & portrait-taking system for mobile apps.*
- 2014-2018 **OSU EUSES/Gender HCI Lab**, Undergraduate Research Assistant.  
Mentor: Margaret Burnett  
*Researched and led projects on lowering barriers to end-user software engineering and gender-inclusive software interface design.*

## AWARDS & HONORS

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- 2022 **University of Washington Husky 100**  
*Awarded to 100 of UW's 60,000 students who make the most of their time at UW.*
- 2018 **National Science Foundation (NSF) Graduate Research Fellowship** (\$138,000 over 3 yrs)
- 2018 **Computing Research Association (CRA) Outstanding Undergraduate Researcher, Finalist**
- 2017 **Adobe Research Women-in-Technology Scholarship** (\$10,000)
- 2015, 2016 **OSU Drucilla Shepard Smith Academic Excellence Awards**

## INVITED TALKS

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- 2021 **International Conference on Software Engineering (ICSE)**, Panel: *Can Researchers Enhance Diversity and Inclusion?* Recording: <https://youtu.be/6LROK9Zqiks>
- 2018 **OSU Celebrating Undergraduate Excellence (CUE)**, Research Symposium Welcome Address.

## STUDENTS SUPERVISED

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I have mentored 10 students (1 graduate, 7 undergraduate, 2 high school), including at least five women, one non-binary person, six People of Color, one from a rural community, and three from economically disadvantaged backgrounds. Four have co-authored academic papers with me. At least three have gone on to pursue graduate education or industry research positions.

## TEACHING

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| INSTRUCTOR         | <b>User-Centered Design Methods</b> , UW INFO 360. Sp '20<br><i>Adapted course materials to support more equitable participation during remote learning; Created original assignments to help students recognize and respond to exclusionary design biases.</i>  |
| TEACHING ASSISTANT | <b>Cooperative Software Development</b> , UW INFO 442. Fa '20<br><i>Helped adapt course content to equitable remote instruction formats, focusing on needs of the most disadvantaged student groups and implementing structures for instructor and peer support.</i><br><b>User-Centered Design Methods</b> , UW INFO 360. Wi '19<br><i>Created assessment questions to determine gaps in students' understandings and adapt instruction accordingly; Prepared and delivered lesson on interface evaluation methods.</i> |

## SERVICE

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| REVIEWER                | <b>ACM CHI</b> , <b>ACM CSCW</b> , <b>Int'l Journal of Child-Computer Interaction</b> , <b>ACM EduCHI</b>  |
| TECHNICAL PROGRAM CHAIR | <b>EduCHI Symposium on HCI Education</b> (2023)<br><i>Overseeing the paper review process for the symposium's research &amp; teaching submissions and working with program committee to make final acceptance decisions. Collaborating with the General Chairs to create and promote community-building workshops prior to the symposium.</i>  |
| MENTOR                  | <b>Trans/Queer in HCI Mentorship Program</b> (2023-24)<br><i>Providing professional and personal support to students in the Human-Computer Interaction field who are part of the LGBTQIA2S+ community.</i>   |
| CHAIR                   | <b>UW iSchool Doctoral Student Association (DSA)</b> (2021-22)<br><i>Organized and presided at DSA meetings and town halls; Led DSA outreach at new student orientation; Advocated for student perspectives to faculty, staff, and administrators.</i>   |
| OFFICER                 | <b>Secretary</b> , UW iSchool Doctoral Student Association (2020-21)<br><i>Organized and disseminated information internally to doctoral students, including meeting minutes; oversaw internal DSA officer elections.</i><br><b>Communications &amp; Outreach</b> , UW iSchool Doctoral Student Association (2019-20)<br><i>Administration of internal &amp; external communications: mailing lists, social media accounts, reports on DSA activity, other outreach channels as requested.</i> |
| STUDENT VOLUNTEER       | <b>ACM CHI</b> : Conference on Human Factors in Computing Systems (2019, 20, 22), <b>ACM SIGCSE</b> : Technical Symposium on Computer Science Education (2019)<br>★ <i>CHI 2019: Received internal SV award "for going above and beyond" typical SV duties to ensure conference participants' access needs were properly met.</i>  |
| STUDENT COORDINATOR     | <b>UW DUB Seminar</b> (2019-20)<br><i>DUB (Design, Use, Build) is an interdisciplinary community at the UW focused on HCI and Design running weekly invited talks with internal and external speakers.</i><br><b>UW Information School PhD Retreat</b> (2019)<br><i>Co-organized annual PhD student retreat to welcome incoming cohort and strengthen ties between members of senior cohorts, fostering stronger interdepartmental community.</i>  |
| PEER MENTOR             | <b>OSU STEM Leaders Program</b> (2015-2018)<br><i>Helped 5 freshmen from underrepresented backgrounds in STEM transition to and succeed in new college environments as they completed original research projects with faculty mentors.</i>   |

## PEER-REVIEWED PUBLICATIONS

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My publications have been cited >400 times, and I have an h-index of 9. ([Google Scholar](#), Dec. 2022)

### Teaching Inclusive Design Skills with the CIDER Assumption Elicitation Technique

A. Oleson, M. Solomon, C. Perdriau, A. J. Ko. (2022)

ACM TOCHI: Transactions on Computer-Human Interaction

*Contributes a theoretically-grounded teaching method to help computing students learn to identify design assumptions that exclude marginalized users and a case study evaluation of its efficacy.*

## **A Decade of Demographics in Computing Education Research: A Critical Review of Trends in Collection, Reporting, and Use**

A. Oleson, B. Xie, J. Salac, J. Everson, F. M. Kivuva, A. J. Ko (2022)

ACM ICER: International Computing Education Research Conference

*Found that most computing education research studied adults, left out key details of data gathering, and often used imprecise aggregate terms to illustrate diversity that reified hegemonic identity norms.*

## **★ Surfacing Equity Issues in Large Computing Courses with Peer-Ranked, Demographically-Labeled Student Feedback**

B. Xie, A. Oleson, J. Everson, A. J. Ko (2022)

PACMHCI: Proceedings of the ACM on Human-Computer Interaction (presented at ACM CSCW)

**★ Best Paper Award for Diversity & Inclusion Contribution** - *represents work "that focuses on or serves minorities, otherwise excluded individuals or populations, or intervenes in systemic structures of inequality"*

*Developed and evaluated a tool that contextualizes student feedback for teaching teams to identify equity issues.*

## **On the Role of Design in K-12 Computing Education**

A. Oleson, B. Wortzman, A. J. Ko (2021)

ACM TOCE: Transactions on Computing Education

*Disentangled the role of design in K-12 CS education, finding that design ideas are pervasive in curricula and standards, but conflate program space (disciplinary) and problem space (nondisciplinary) design, masking potential challenges to teaching and learning design concepts.*

## **Computing Students' Learning Difficulties in HCI Education**

A. Oleson, M. Solomon, A. J. Ko (2020)

ACM CHI: Conference on Human Factors in Computing Systems

*Investigated learning challenges in HCI design classes, finding that students can struggle to differentiate design from engineering, to interpret feedback and scope design problems, and to design for diversity, among others.*

## **Scout: Rapid Exploration of Interface Layout Variations through High-Level Design Constraints.**

A. Swearngin, C. Wang, A. Oleson, A. J. Ko, J. Fogarty (2020)

ACM CHI: Conference on Human Factors in Computing Systems

*Designed, implemented, and evaluated Scout, a system to support designers' ideation of user interface layouts. Scout helped designers accelerate ideation and produce more diverse design ideas than designers using standard tools.*

## **Semi-Automating (or not) a Socio-Technical Method for Socio-Technical Systems**

C. J. Mendez, Z. Steine-Hanson, A. Oleson, A. Horvath, C. Hill, C. Hilderbrand, A. Sarma, M. Burnett. (2018)

IEEE VL/HCC: Symposium on Visual Languages & Human-Centric Computing

*Through a field study and a controlled 92-participant study, discussed the benefits and drawbacks of semi-automating parts of the software interface inspection process from the perspective of cognitive load.*

## **Pedagogical Content Knowledge for Teaching Inclusive Design**

A. Oleson, C. J. Mendez, Z. Steine-Hanson, C. Hilderbrand, C. Perdriau, M. Burnett, A. J. Ko. (2018)

ACM ICER: International Computing Education Research Conference

*Identified 11 pieces of pedagogical content knowledge for teaching inclusive design in higher education, including strategies for anticipating and addressing resistance, scaffolding perspective-taking, and tailoring instruction to prior beliefs.*

## **★ Gender-Inclusiveness Personas vs. Stereotyping: Can We Have it Both Ways?**

C. G. Hill, M. Haag, A. Oleson, C. J. Mendez, N. Marsden, A. Sarma, M. Burnett. (2017)

ACM CHI: Conference on Human Factors in Computing Systems

## **★ Best Paper Honorable Mention**

*Using multiple profile pictures on one persona may expand product designers' consideration of multiple genders without harming persona engagement or advancing harmful gender stereotypes.*

## **Toward Theory-Based End-User Software Engineering**

M. Burnett, T. Kulesza, A. Oleson, S. Ernst, L. Beckwith, J. Cao, W. Jernigan, W. Grigoreanu (2017)

Chapter in *New Perspectives in End-User Development*, Springer International Publishing

*Highlighted the need for stronger theoretical foundations in end-user software engineering (EUSE) and present examples of EUSE projects that successfully went beyond individual tools to produce general methods and principles.*

### **General Principles for a Generalized Idea Garden**

W. Jernigan, A. Horvath, M. Lee, M. Burnett, T. Cuilty, S. Kuttal, A. Peters, I. Kwan, F. Bahmani, A. J. Ko, C. J. Mendez, **A. Oleson** (2017)

Journal of Visual Languages & Computing

*End-user programmers who are not necessarily interested in learning programming can benefit from a just-in-time help system called the Idea Garden, which is built on the presented generalized architecture.*

### **GenderMag Experiences in the Field: The Whole, the Parts, and the Workload**

C. G. Hill, S. Ernst, **A. Oleson**, A. Horvath, M. Burnett (2016)

IEEE VL/HCC: Symposium on Visual Languages & Human-Centric Computing

*Software practitioners who use the GenderMag method to identify gender-inclusiveness issues in their software interfaces engage with the personas at a high rate, but may also detour and introduce recording errors during sessions.*

### **Programming, Problem Solving, and Self-Awareness: Effects of Explicit Guidance**

D. Loksa, A. J. Ko, W. Jernigan, **A. Oleson**, C. J. Mendez, M. Burnett (2016)

ACM CHI: Conference on Human Factors in Computing Systems

*Teaching novice programmers explicit problem-solving strategies can positively impact their productivity, self-efficacy, independence, and growth mindset development.*

## **WORKSHOPS AND SYMPOSIA (PEER-REVIEWED)**

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### **Toward the Development of HCI Pedagogical Content Knowledge.**

**A. Oleson**, A. J. Ko (2020)

EduCHI Annual Symposium on HCI Education @ CHI'20

*"Unsolved challenge" paper discussing the need for a robust body of HCI pedagogical content knowledge.*

### **The GenderMag-Teach Project**

M. Burnett, Z. Steine-Hanson, **A. Oleson** (2019)

EduCHI Annual Symposium on HCI Education @ CHI'19

*Described how we established and developed an online community of practice for educators teaching gender-inclusive software interface design.*

### **Gender Biases in Software for Problem-Solving**

M. Burnett, A. Sarma, C. Mendez, **A. Oleson**, C. Hilderbrand, Z., A. J. Ko (2018)

Designing Technologies to Support Human Problem Solving @ VL/HCC'18

*Position paper to call attention to how software can be biased against certain problem-solving styles, especially those favored by women, and how to address these issues.*

## **DOCTORAL CONSORTIA**

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### **CIDER: A Method to Teach Practical Critical Software Design Skills**

**A. Oleson** (2022)

SIGCSE DC @ 2022 ACM Conference on International Computing Education Research

*Motivates the need to equip computing students with inclusive technology design skills, then presents a teaching technique for doing so and a plan to evaluate its efficacy in different learning contexts.*

### **Supporting Critical Software Design Decision-Making in HCI Education**

**A. Oleson** (2022)

2022 DUB Doctoral Consortium @ the University of Washington

*Describes past and proposed research on how to help computing students think more critically about the impacts of their design decisions so that they can create more usable, accessible, and inclusive software.*

## **MAGAZINE ARTICLES**

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### **It Is Time for More Critical CS Education**

A. J. Ko, **A. Oleson**, M. Kirdani-Ryan, Y. Register, B. Xie, M. Tari, M. J. Davidson, S. Druga, D. Loksa (2020)

ACM CACM: Communications of the ACM

*Position article calling for the integration of more critical lenses into computer science education, such as that computing has limits, data has limits, and computer scientists hold responsibility for their creations and decisions.*

## PATENTS

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### **Smart Guide to Capture Digital Images that Align with a Target Image Model**

**A. Oleson**, R. Mech, J. Echevarria, C. Lu (2018)

Filed as US15/897,951; published as US20190253614A1 and US10574881B2

*Describes an interface model for analyzing a mobile device's camera feed as a picture is being taken and guiding a user to achieve a higher-quality selfie or portrait in real time.*

## DIGITAL BOOKS

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*These were created to be free, online, accessible, and responsive resources for the computing education community. They are not peer-reviewed in the traditional sense, but instead iteratively improved by feedback from community members.*

### **CS and Design**

A. J. Ko, **A. Oleson** (2022)

chapter in [Critically Conscious Computing: Methods for Secondary Education](#)

Editors: A. J. Ko, A. Beitlers, B. Wortzman, M. Davidson, **A. Oleson**, M. Kirdani-Ryan, S. Druga, J. Everson

*Describes how design and computing intersect in educational contexts, including the differences between design and engineering mindsets, different pedagogical approaches, and a unit sketch for teaching CS as design-informed engineering.*