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Alannah Oleson

Ph.D. Candidate

I work toward a world where *everyone* can effectively and authentically interact with technology by contributing strategies to teach inclusive technology design skills in computing education contexts.

Education

2018-present **University of Washington**, Seattle, WA, USA
Ph.D. in Information Science
Advisor: Amy J. Ko
Thesis: *Integrating Inclusive Design and Computing Education*
Estimated graduation: Fall 2023

2021 **University of Washington**, Seattle, WA, USA
M.S. in Information Science
Advisor: Amy J. Ko
General Exam: *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

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 patented 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

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

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

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

Instructor

User-Centered Design Methods, UW INFO 360. Sp '20
Adapted course materials to support more equitable participation during remote learning; Created original assignments to help students recognize and respond to exclusionary design biases.

Teaching Assistant

Cooperative Software Development, UW INFO 442. Fa '20
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.
User-Centered Design Methods, UW INFO 360. Wi '19
Created assessment questions to determine gaps in students' understandings and adapt instruction accordingly; Prepared and delivered lesson on interface evaluation methods.

Service

Reviewer

ACM **CHI**, ACM **CSCW**, **Int'l Journal of Child-Computer Interaction**, ACM **EduCHI**

Steering Committee

EduCHI Symposium on HCI Education
Providing oversight and guidance to the organizing committee as the community transitions to a standalone conference in 2024.

Technical Program Chair

EduCHI Symposium on HCI Education (2023)
Oversaw the paper review process for the symposium's research & teaching submissions and worked with program committee to make final acceptance decisions. Collaborated with the General Chairs to create and promote community-building workshops prior to the symposium.

Mentor

Trans/Queer in HCI Mentorship Program (2023-24)
Providing professional and personal support to students in the Human-Computer Interaction field who are part of the LGBTQIA2S+ community.

Chair

UW iSchool Doctoral Student Association (DSA) (2021-22)
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.

Officer

Secretary, UW iSchool Doctoral Student Association (2020-21)
Organized and disseminated information internally to doctoral students, including meeting minutes; oversaw internal DSA officer elections.
Communications & Outreach, UW iSchool Doctoral Student Association (2019-20)
Administration of internal & external communications: mailing lists, social media accounts, reports on DSA activity, other outreach channels as requested.

Student Volunteer

ACM **CHI** Conference (2019, 20, 22, 23), ACM **SIGCSE** Technical Symposium (2019)
★ *CHI 2019: Received internal SV award "for going above and beyond" typical SV duties to ensure conference participants' access needs were properly met.*

Student Coordinator

UW DUB Seminar (2019-20)
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.

UW Information School PhD Retreat (2019)
Co-organized annual PhD student retreat to welcome incoming cohort and strengthen ties between members of senior cohorts, fostering stronger interdepartmental community.

Peer Mentor

OSU STEM Leaders Program (2015-2018)
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.

Peer-Reviewed Publications

My publications have been cited >500 times, and I have an h-index of 10. (Google Scholar, June. 2023)

Teaching Inclusive Design Skills with the CIDER Assumption Elicitation Technique
A. Oleson, M. Solomon, C. Perdriau, A. J. Ko. (2023)
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, as well as a case study evaluation of its efficacy.

Funds of Knowledge Used by Adolescents of Color in Scaffolded Sensemaking around Algorithmic Fairness
J. Salac, **A. Oleson**, L. Armstrong, A. Le Meur, A. J. Ko (2023)
ACM ICER: International Computing Education Research Conference
Found that youth in a summer computing camp used a tiered human lens and then technological lens to reason through algorithmic fairness, often invoking facets of their identities and background knowledge.

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)

EduCHI 2023: 5th Annual Symposium on HCI Education
C. Gray, C. M. MacDonald, C. Lallemand, **A. Oleson**, A. R. L. Carter, O. St-Cyr, C. Pitt (2020)
EduCHI Annual Symposium on HCI Education @ CHI'2023
Proposal paper for the annual symposium, formatted like a one day conference with research talks and teaching demos.

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

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

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

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

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.

Human-Computer Interaction and Accessiblity
A. Zolyomi, **A. Oleson** (forthcoming, 2023)
chapter in Teaching Accessible Computing
Editors: A. J. Ko, R. Ladner, **A. Oleson**
Offers foundational knowledge about Disability and pedagogical strategies to support CS faculty who want to teach about accessibility, but don't know where to start. Currently in the early writing stages, this book will contain perspectives from >20 domain experts on how to integrate accessibility into CS-specific courses (CS1, data structures, etc.). We anticipate releasing the first edition of this book in Fall 2023.

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.