Jane Hoffswell, Ph.D.

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Research Interests

My research aims to improve how people write, manage, understand, and reuse both code and data through the design of new programming languages and visualization tools. By focusing new languages and tools on the domain-specific details relevant to the user, we can improve how users interact with the system to better promote program understanding, and proactively surface surprising or incorrect results.

Education

2020 — Seattle, WA
PhD Computer Science and Engineering
Paul G. Allen School of Computer Science & Engineering
University of Washington (UW)
Advisor: Jeffrey Heer

2016 — Seattle, WA
MS Computer Science and Engineering
Paul G. Allen School of Computer Science & Engineering
University of Washington (UW)
Advisor: Jeffrey Heer

2014 — Claremont, CA
BS Computer Science
Harvey Mudd College (HMC)
Advisor: Ben Wiedermann

Professional Experience

2020 - present — Seattle, WA
Lecturer, University of Washington
Taught courses on visualization (CSE442) in the Paul G. Allen School of Computer Science & Engineering. Developed course curriculums and managed a group of teaching assistants.

2014 - 2020 — Seattle, WA
Graduate Research Assistant, UW Allen School of Computer Science & Engineering
Languages and Visualization Tools for Data-Centric End-User Programming of Interactive Visualizations.
Advisor: Jeffrey Heer. Conducted research on the design and development of new systems and program understanding techniques for visualization design. Conducted interviews with experts to inform research directions and performed user evaluations of the proposed systems.

Summer 2019 — Seattle, WA
Research Intern, Adobe Research
Techniques for Flexible Responsive Visualization Design
Advisors: Leo Zhicheng Liu and Wilmot Li. Conducted research on the design of responsive visualizations for news articles, which adapt the visualization to different types of devices.

Summer 2018 — Seattle, WA
Research Intern, Adobe Research
Interactive Repair of Tables Extracted from PDF Documents on Mobile Devices
Advisor: Leo Zhicheng Liu. Conducted research on the future of dynamic PDF documents, focusing on the analysis & reuse of tabular data for dynamic applications on mobile devices.

Summer 2013 — Claremont, CA
Undergraduate Research Assistant, HMC Computer Science Department
Visualizing the Graphical Execution of Abstract Program Traces
Advisor: Ben Wiedermann. Modified the UC Santa Barbara JavaScript Abstract Interpreter to output runtime information about the abstract program trace and implemented a tool for visualizing program traces using D3.js.

Summer 2012 **Undergraduate Research Assistant, HMC Computer Science Department**
Claremont, CA *Large Scale, Educational Video Games for Middle School Students*
Advisor: Elizabeth Sweedyk. Developed a math-based game for the iPad that teaches children about ratios by taking advantage of the ratio-based behavior of mixing paint.

Honors and Awards

2020 ACM CHI Best Paper Award (for "Techniques for Flexible Responsive Visualization Design")

2019 ACM CHI 2019 Doctoral Consortium Award

Hopper x 1 Seattle 2019 Scholarship Award Recipient

2014 Jeff Dean – Heidi Hopper Endowed Regental Fellowship Recipient

Harvey Mudd College Computer Science Clinic Poster Award

Honorable Mention CRA Undergraduate Research Award Competition

2011-2014 Harvey Mudd College Dean's List

2010 International Baccalaureate Diploma

Thesis

2020 Languages and Visualization Tools for Data-Centric End-User Programming of Interactive Visualizations.
Jane Hoffswell. *Committee:* Jeffrey Heer (Advisor), Alan Borning, Amy J. Ko
http://hdl.handle.net/1773/45922

Publications

2020 Techniques for Flexible Responsive Visualization Design.
Jane Hoffswell, Wilmot Li, and Zhicheng Liu.
CHI 2020. doi.org/10.1145/3313831.3376777 [24% Acceptance Rate, **Best Paper (Top 1%)**]

2019 Interactive Repair of Tables Extracted from PDF Documents on Mobile Devices.
Jane Hoffswell and Zhicheng Liu.
CHI 2019. doi.org/10.1145/3290605.3300523 [24% Acceptance Rate]

2018 SetCoLa: High-Level Constraints for Graph Layout.
Jane Hoffswell, Alan Borning, Jeffrey Heer.
EuroVis 2018. doi.org/10.1111/cgf.13440 [29% Acceptance Rate]

Augmenting Code with In Situ Visualizations to Aid Program Understanding.
Jane Hoffswell, Arvind Satyanarayan, Jeffrey Heer.
CHI 2018. doi.org/10.1145/3173574.3174106 [26% Acceptance Rate]

2017 Supporting Patient-Provider Collaboration to Identify Individual Triggers using Food and Symptom Journals.
Jessica Schroeder, **Jane Hoffswell**, Chia-Fang Chung, James Fogarty, Sean Munson, Jasmine Zia.
CSCW 2017. doi.org/10.1145/2998181.2998276 [35% Acceptance Rate]

2016 Visual Debugging Techniques for Reactive Data Visualization.
Jane Hoffswell, Arvind Satyanarayan, Jeffrey Heer.
EuroVis 2016. doi.org/10.1111/cgf.12903 [27% Acceptance Rate]

Reactive Vega: A Streaming Dataflow Architecture for Declarative Interactive Visualization.
Arvind Satyanarayan, Ryan Russell, **Jane Hoffswell**, Jeffrey Heer.
InfoVis 2016. doi.org/10.1109/TVCG.2015.2467091 [22% Acceptance Rate]

Workshop Publications

Spring 2019 — Glasgow, UK
Languages & Visualizations to Enable Effective End User Programming.
Jane Hoffswell.
CHI Extended Abstracts 2019.
doi.org/10.1145/3290607.3299067

Spring 2015 — Cagliari, Italy
Debugging Vega through Inspection of the Data Flow Graph.
Jane Hoffswell, Arvind Satyanarayan, Jeffrey Heer.
EuroVis Workshop on Reproducibility, Verification, and Validation in Visualization (EuroRV3), 2015.
doi.org/10.2312/eurorv3.20151144

Posters

Spring 2019 — Glasgow, UK
Languages & Visualizations to Enable Effective End User Programming.
ACM Human Factors in Computing Systems Doctoral Consortium Poster, 2019.

Fall 2016 — Seattle, WA
Visual Debugging Techniques for Reactive Data Visualization.
University of Washington Computer Science & Engineering Affiliates, 2016.

Leadership and Volunteer Experience

2018 - 2020 — Seattle, WA
Grad, VGrad, & Postdoc Advisory Council, UW Computer Science & Engineering
Participated as a council member of the G5PAC to discuss and address the needs of researchers and teaching assistants in the Paul G. Allen School.

Winter 2020 — Seattle, WA
Practice Talks Seminar Organizer (CSE591L), UW Computer Science & Engineering
Organized and lead a new weekly seminar focused on presenting and providing feedback on practice talks from graduate students in the Paul G. Allen School.

2017 - present
Reviewer

ACM CHI - ACM Human Factors in Computing Systems	2017, 2019-2020
IEEE VIS - IEEE Visualization	2018-2020
ACM UIST - ACM User Interface Software and Technology	2017-2020
IEEE TVCG - IEEE Transactions on Visualization and Computer Graphics	2018

Recognition for Outstanding Reviews: CHI 2019

Winter 2018 — Seattle, WA
HCI Visit Days Coordinator, UW Computer Science & Engineering
Organized group activities and one-on-one meetings for admitted graduate students.

Fall 2016 — Seattle, WA
Graduate Student Admissions Volunteer, UW Computer Science & Engineering
Reviewed graduate student admissions applications.

Fall 2015 — Seattle, WA
New Graduate Orientation Leader, UW Computer Science & Engineering
Coordinated talks from current students and faculty for incoming graduate students, organized activities for the event, and hosted the two-day orientation.

2013-2014 — Claremont, CA
Project Manager, Capstone Project, HMC Computer Science Department
Visualizing and Exploring Performance Data alongside VMware
Advisor: Melissa O'Neill. Acted as project manager for a senior capstone project with VMware in which we developed a dashboard for visualizing system performance using D3.js.

Fall 2015 — Claremont, CA
Project Manager, USLI Rocketry Team, Harvey Mudd College
Founder and project manager of a NASA sponsored rocketry team for the University Student Launch Initiative (USLI). Designed and launched a rocket with a scientific payload.

Teaching Experience

2020 - present — Seattle, WA
Lecturer, UW Paul G. Allen School of Computer Science & Engineering
CSE442 – Data Visualization (Spring 2017) — *Co-Instructor: Jeffrey Heer*
Developed curriculumn, taught lecturers, graded coursework, managed teaching assistants.

2016-2017 — Seattle, WA
Teaching Assistant, UW Paul G. Allen School of Computer Science & Engineering
CSE442 – Data Visualization (Spring 2017). — *Professor: Jeffrey Heer*
CSE512 – Data Visualization (Spring 2016). — *Professor: Jeffrey Heer*
Graded coursework, held office hours, and taught extra tutorial sessions.

Winter 2014 — Seattle, WA
Teaching Assistant, UW Masters in Human Computer Interaction + Design
HCID520 – User Interface Software & Technology (Wi 2014). — *Professor: Jeffrey Heer*
Helped to develop the course curriculum. Tutored and graded coursework.

2012-2014 — Claremont, CA
Tutor and Grader, HMC Computer Science Department
CS131 – Programming Languages (Spring 2014). — *Professor: Melissa O'Neill*
CS151 – Artificial Intelligence (Spring 2014). — *Professor: Jim Boerkoel*
CS121 – Software Development (Fall 2013). — *Professor: Mike Erlinger*
CS121 – Software Development (Spring 2013). — *Professor: Elizabeth Sweedyk*
CS60 – Principles of Computer Science (Fall 2012). — *Professor: Zach Dodds*
Graded coursework and held office hours.

Talks

Spring 2020 — Seattle, WA
Techniques for Flexible Responsive Visualization Design.
DUB Shorts, University of Washington. https://vimeo.com/418215216

Spring 2020 — Seattle, WA
How People Understand Systems.
UW Allen School Women's Research Day. https://youtu.be/EJtakt7l3BQ

Spring 2014 — San Diego, CA
Visualizing the Graphical Execution of Programs for Javascript Abstract Interpretation.
Southern California Celebration for Women in Computing.

Fall 2013 — Los Angeles, CA
Visualizing the Graphical Execution of Programs for Javascript Abstract Interpretation.
Southern California Programming Languages and Systems Workshop.

Summer 2012 — Santa Ana, CA
Harvey Mudd College NASA University Student Launch Initiative Team Presentation.
AIAA Southern California Aerospace Systems and Technology (ASAT) Conference.

Graduate Coursework

2019 Research Methods and Data Analysis in Software Systems Research
2017 Accurate Computing · Constraint Programming
2016 Advanced Topics in HCI · Computer-Aided Reasoning for Software · Research Design
2015 Computer Systems · Data Visualization · Principles of Database Management Systems
2014 Machine Learning

Relevant Skills

Coding: JavaScript, Python, HTML/CSS, D3.js, Vega/Vega-Lite
User Research: Semi-Structured Interviews, Surveys, Experimental Design
Leadership: Project Management, Scientific & Technical Writing, Presentations
Tools: GitHub, Tableau, LaTeX, Keynote, Microsoft Excel, OmniGraffle