

## ADAM RULE

University of Wisconsin–Madison  
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## RESEARCH INTERESTS

Human-Computer Interaction, Health Informatics, Human-Centered Data Science,  
Electronic Health Records, Cognitive Science, Computational Notebooks

## ACADEMIC POSITIONS

- 2021 - PRES. University of Wisconsin–Madison  
Assistant Professor of Information Science
- 2019 - 2021 Oregon Health & Science University  
Postdoctoral Scholar of Medical Informatics and Clinical Epidemiology  
Mentors: Michael Chiang, Michelle Hribar

## EDUCATION

- 2013 - 2018 University of California, San Diego  
PHD, *Cognitive Science*  
Advisor: Jim Hollan  
Committee: Gloria Mark, Brad Voytek, Bill Griswold, Philip Guo, Robert El-Kareh
- 2011 - 2013 University of Washington, Seattle  
MS, *Human Centered Design & Engineering*
- 2008 - 2011 University of Illinois, Urbana-Champaign  
BS, *Industrial Engineering*—HIGHEST HONORS

## AWARDS AND FELLOWSHIPS

### AWARDS

- 2021 Distinguished Paper Award Nominee, AMIA 2021 – Top 10 papers
- 2021 Best Paper, 2<sup>nd</sup> Place, MedInfo 2021
- 2018 Honorable Mention, CHI 2018 — top 5% of all submissions
- 2016 Outstanding Teaching Award, Cognitive Science Department, Winter 2016
- 2012 Honorable Mention, HRI 2012 — top 5% of all submissions
- 2012 Microsoft Design Expo — Best Presentation

### FELLOWSHIPS

2019 - 2021 National Library of Medicine Postdoctoral Training Grant  
2014 - 2017 National Library of Medicine Predoctoral Training Grant — 3 years tuition & stipend

## GRANTS

### EXTRAMURAL

- 6/2023 - 5/2024 Characterizing Team Support for Medication Orders in Primary Care  
Role: Co-Investigator. PI: Brian Arndt  
(\$60,000)
- 5/2022 - 4/2023 Off the Clock: Validating Measures of After-hours EHR Work in Primary Care at UW Health. American Medical Association.  
Role: Co-Investigator. PI: Brian Arndt  
(\$50,000)

## JOURNAL PUBLICATIONS




- J18 **Adam Rule**, Thomas Kannampallil, Michelle R Hribar, Adam C Dziorny, Robert Thombley, Nate C Apathy, Julia Adler-Milstein. Guidance for Reporting Analysis of Metadata on Electronic Health Record Use. *Journal of the American Medical Informatics Association*. 2024 (In Press)
- J17 Brian G Arndt, Mark A Micek, **Adam Rule**, Christina M Shafer, Jeffrey J Baltus, Christine A Sinsky. More Tethered to the EHR: EHR Workload Trends Among Academic Primary Care Physicians, 2019-2023. *Annals of Family Medicine*. 2024. (In Press)
- J16 Mark A Micek, **Adam Rule**, Jeffrey J Baltus, Brian G. Arndt. Association of Primary Care Physicians' Ambulatory Full-time Equivalencies With Time in the Electronic Health Record. *JAMA Network Open*, 2023
- J15 Brian G Arndt, Mark A Micek, **Adam Rule**, Christina M Shafer, Jeffrey J Baltus, Christine A Sinsky. Refining Vendor-Defined Measures to Accurately Quantify EHR Workload Outside Time Scheduled With Patients. *Annals of Family Medicine*, 2023
- J14 **Adam Rule**, Christina M Shafer, Mark A Micek, Jeffrey J Baltus, Christine A Sinsky, Brian G Arndt. Gender Differences in Primary Care Physicians' Electronic Health Record Use Over Time: An Observational Study. *Journal of General Internal Medicine*, 2023
- J13 **Adam Rule**, Edward Melnick, Nate Apathy. Using event logs to observe interactions with electronic health records: an updated scoping review shows increasing use of


vendor-derived measures. *Journal of the American Medical Informatics Association*, 2023

- J12 Haley Dusek, Isaac Goldstein, **Adam Rule**, Michael Chiang, Michelle Hribar. Clinical Documentation During Scribed and Non-scribed Ophthalmology Office Visits. *Ophthalmology Science*, 2021
- J11 **Adam Rule**, Michelle Hribar. Frequent but fragmented: use of note templates to document outpatient visits at an academic health center. *Journal of the American Medical Informatics Association (JAMIA)*, 2021
- J10 Jimmy Chen, Michelle Hribar, Isaac Goldstein, **Adam Rule**, Wei-Chun Lin, Haley Dusek, Michael Chiang. Electronic health record note review in an outpatient specialty clinic: who is looking? *Journal of the American Medical Informatics Association Open (JAMIA Open)*, 2021
- J9 **Adam Rule**, Steven Bedrick, Michael Chiang, Michelle Hribar. Length and Redundancy of Outpatient Progress Notes Across a Decade at an Academic Medical Center. *JAMA Network Open*, 2021
- J8 Christine Sinsky, **Adam Rule**, Genna Cohen, Brian Arndt, Tait Shanafelt, Christopher Sharp, Sally Baxter, Ming Tai-Seale, Sherry Yan, You Chen, Julia Adler-Milstein, Michelle Hribar. Metrics for assessing physician activity using electronic health record log data. *Journal of the American Medical Informatics Association (JAMIA)*, 2020
- J7 Brad Henriksen, Isaac Goldstein, **Adam Rule**, Abigail Huang, Haley Dusek, Austin Igelman, Michael Chiang, Michelle Hribar. Electronic Health Records in Ophthalmology: Source and Method of Documentation. *American Journal of Ophthalmology*, 2020
- J6 **Adam Rule**, Michelle Hribar, Michael Chiang. Using Electronic Health Record Audit Logs to Study Clinical Activity: A Systematic Review of Aims, Measures, and Methods. *Journal of the American Medical Informatics Association (JAMIA)*, 2020
- J5 Michelle Hribar, **Adam Rule**, Abigail Huang, Haley Dusek, Isaac Goldstein, Bradley Henriksen, Wei-Chun Lin, Austin Igelman, Michael Chiang. Redundancy of Progress Notes for Serial Office Visits. *Ophthalmology*, 127(1), 2020
- J4 **Adam Rule**, Amanda Birmingham, Cristal Zuniga, Ilkay Altintas, Shih-Cheng Huang, Rob Knight, Niema Moshiri, Mai H. Nguyen, Sara Brin Rosenthal, Fernando Pérez, Peter W. Rose. Ten Simple Rules for Writing and Sharing Computational Analyses in Jupyter Notebooks. *PLoS Computational Biology*, 15(7): e1007007, 2019

- J3 **Adam Rule**, Ian Drosos, Aurélien Tabard, Jim Hollan. Aiding Collaborative Reuse of Computational Notebooks with Annotated Cell Folding. *Proceedings of the ACM, Human-Computer Interaction*, 1(CSCW), 2018
- J2 **Adam Rule**, Aurélien Tabard, Jim Hollan. Using Visual Histories to Reconstruct the Mental Context of Suspended Activities. *Human-Computer Interaction*, 32(5-6), 2017
- J1 Tim F Liao, **Adam Rule**, Rynanne Ardisana, Alexandra Knitcher, Amanda Mayo Corey Sarcu. Social Behavior in Public Spaces in a College Town. *Sociologija i prostor/Sociology & Space*. 2012. 50(1):3-26

#### CONFERENCE PUBLICATIONS

- C8  **Adam Rule**, Sarah T Florig, Steven Bedrick, Vishnu Mohan, Jeffrey A Gold, Michelle R Hribar. Comparing Scribed and Non-scribed Outpatient Progress Notes. *Studies in Health Technology and Informatics (MedInfo)*, 2021  
**BEST PAPER, 2<sup>ND</sup> PLACE**
- C7  **Adam Rule**, Sarah Florig , Steven Bedrick , Vishnu Mohan , Jeffrey Gold , Michelle Hribar. Comparing Scribed and Non-scribed Outpatient Progress Notes. *In Proceedings of the American Medical Informatics Association Annual Symposium (AMIA)*, 2021. **DISTINGUISHED PAPER NOMINEE** (10 OF 84)
- C6 Michelle Hribar, Haley Dusek, Isaac Goldstein, **Adam Rule**, Michael Chiang. Methods for Large-Scale Quantitative Analysis of Scribe Impacts on Clinical Documentation. *In Proceedings of the American Medical Informatics Association Annual Symposium (AMIA)*, 2020
- C5 **Adam Rule**, Isaac Goldstein, Michelle Hribar, Michael Chiang. Clinical Documentation as End-User Programming. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2020
- C4  **Adam Rule**, Aurélien Tabard, Jim Hollan. Exploration and Explanation in Computational Notebooks. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2018  
**HONORABLE MENTION, TOP 5% OF SUBMISSIONS**
- C3 **Adam Rule**, Steven Rick, Michael Chiu, Phillip Rios, Shazia Ashfaq, Alan Calvitti, Wesley Chan, Nadir Weibel, Zia Agha. Validating free-text order entry for a note-centric EHR. *In Proceedings of the American Medical Informatics Association Annual Meeting (AMIA)*, 2015
- C2 **Adam Rule**, Aurélien Tabard, Karen Boyd, Jim Hollan. Restoring the Context of Interrupted Work with Desktop Thumbnails. *In Proceedings of the Cognitive Science Society Annual Meeting (CogSci)*, 2015

- C1  **Adam Rule**, Jodi Forlizzi. Designing interfaces for multi-user, multi-robot systems. *In Proceedings of the ACM Conference on Human Robot Interaction (HRI)*, 2012  
**HONORABLE MENTION, TOP 5% OF SUBMISSIONS**

#### **DOCTORAL CONSORTIUM, WORKSHOPS, POSTERS & ABSTRACTS**

- A3 Alan Labrum, Kathryn Marxen-Simonson, Tosha Zaback, **Adam Rule**, John Boyer, Mitch Brinks. Six Feet of Separation: Physical Distancing Impacts on Blind and Low Vision During COVID-19 Pandemic. *Investigative Ophthalmology & Visual Science (ARVO)*, 2021
- A2 Michelle Hribar, Haley Dusek, Isaac Goldstein, **Adam Rule**, Michael Chiang. Documentation Composition and Efficiency During Scribed and Non-Scribed Ophthalmology Visits. *Investigative Ophthalmology & Visual Science (ARVO)*, 2020
- A1 Sarah Glass, **Adam Rule**, Michelle Hribar, Thomas Hwang, Michael Chiang. Electronic Health Records in Ophthalmology: Quantitative evaluation of progress note utility for clinical decision-making. *Investigative Ophthalmology & Visual Science (ARVO)*, 2020
- W1 **Adam Rule**, Aurélien Tabard, Jim Hollan. Traces: A Flexible, Open Source Activity Tracker for Workplace Studies. *Workshop on the Quantified Workplace at the ACM Conference on Computer Supported Cooperative Work (CSCW)*, 2017
- P3 **Adam Rule**, Erin Gillespie, Nadir Weibel, Todd Pawlicki. Design Thinking in Radiation Oncology. *Human Factors and Ergonomics Society Healthcare Symposium*, 2016
- P2 **Adam Rule**, Aurélien Tabard, Jim Hollan. Thinking in 4D: Preserving and Sharing Mental Context Across Time. *In Proceedings of the ACM Conference on Computer Supported Cooperative Work and Social Computing Companion (CSCW)*, 2016
- P1 Karen Boyd, **Adam Rule**, Aurélien Tabard, Jim Hollan. Human Values in Tracking and Sharing Computer-Mediated Activity at Work. *In Proceedings of the ACM Conference on Computer Supported Cooperative Work and Social Computing Companion (CSCW)*, 2016
- D1 **Adam Rule**. Visualizing Computer Activity to Support the Resumption of Long-term Creative Work. *In Proceedings of the SIGCHI Conference on Creativity & Cognition*, 2015

#### **DISSERTATION**

- 2018 The Design and Use of Computational Notebooks  
Adam Rule  
*Cognitive Science*, UC San Diego

## **MENTORING & ADVISING**

- 2021 - Pres. UNIVERSITY OF WISCONSIN – MADISON  
Rutvi Shah (MD)  
Christina Dudley (MD)  
Baolu Yu (MS)  
Viona Xu (BS)
- 2019 - 2021 OREGON HEALTH & SCIENCE UNIVERSITY  
Kyle Walters (MD)  
Haley Dusek (MD)  
Jimmy Chen (MD)  
Michael Aaby (BS)
- 2013 - 2018 UNIVERSITY OF CALIFORNIA, SAN DIEGO  
Azeem Ghumman (MS Thesis) — Software Engineer @ Zoox  
Rizwan Ahmad (MS Thesis) — Sr. Software Engineer @ Notebowl  
Jonas Kemper (MS) — Software Engineer @ McKinsey Dig. Labs  
Kendall Youngstrom (BS Thesis) — UX Researcher @ Google  
Ram Dixit (BS Thesis) — MS Student @ University of Texas, Houston  
Karen Boyd (BS) — PhD Student @ University of Maryland  
Adam Powers (BS) — Information Developer @ Tealium  
Regina Cheng (BS) — PhD Student @ University of Washington  
Nathan Hassanzadeh (BS)  
Katya Noble (BS) — UX Design Intern @ Axos Bank  
Allison Reiss (BS) — Software Engineer @ Kiran Analytics  
Evan Schmitz (BS) — UX Researcher @ Microsoft

## **TEACHING EXPERIENCE**

### *Instructor*

- Fall 2023 LIS 613 — User Experience III  
Fall 2023 LIS 615 — Systems Analysis and Project Management for Information Professionals  
Spring 2023 LIS 470 — Interaction Design Studio  
Spring 2023 LIS 612 — User Experience II (UX Design)  
Fall 2022 LIS 613 — User Experience III (UX Research)  
Fall 2022 LIS 615 — Systems Analysis and Project Management for Information Professionals  
Spring 2022 LIS 612 — User Experience II (UX Design)  
Fall 2021 LIS 341 — Intro to Interaction Design  
Fall 2021 LIS 615 — Systems Analysis and Project Management for Information Professionals

### *Teaching Assistant*

- Summer 2019 BMI 510 — Human Computer Interaction in Biomedicine

Spring 2018 COGS 10 — Cognitive Consequences of Technology  
 Winter 2017 DSGN 1 — Design of Everyday Things  
 Winter 2016 CSE170/COGS 120 — HCI Design - Outstanding Teaching Award  
 Winter 2015 COGS 102b — Cognitive Ethnography  
 Spring 2014 COGS 102c — Cognitive Design Studio

## SERVICE

### REVIEWING

CHI (2016, 19-23), CSCW (2019, 21, 22), IUI (2019), UIST (2020) AMIA (2015-16, 19-23), JAMIA (2020-23), JAMIA Open (2020), JBI (2020), Ophthalmology (2019), Applied Clinical Informatics (2019, 21,23), JAMA Network Open (2021), IJMI (2022)

### OTHER SERVICE

2019 AMIA Student Paper Competition Committee  
 2019 EXITO Career Panel — Research Diversity program at Portland State University

## INVITED TALKS

Cognitive Science and Human Computer Interaction

*UW Health, Clinical Informatics Fellowship Seminar, Sept 2022*

Using Software Logs to Study Electronic Health Record Use in Primary Care

*University of Wisconsin-Madison, LIS 613: User Experience Design III, Jun 2022*

*University of Wisconsin-Madison, Biostatistics and Medical Informatics Seminar, Mar*

2022

Electronic Health Record Use in Primary Care

*University of Wisconsin-Madison, Population Health Seminar, Dec 2022*

*UW Health, Clinical Informatics Community of Practice, Oct 2022*

Electronic Health Records

*University of Wisconsin-Madison, CS 202, Intro to Computer Science, Jul 2022*

Composition of Clinical Notes

*UW-Madison, LSC 617: Health Communication in the Information Age, Nov 2023*

*UW-Madison, COM ARTS 617: Health Communication in the Information Age, Nov*

2022

*University of Wisconsin-Madison, LIS 201, The Information Society, Oct 2022*

*UW Health, Medical Informatics Group, Feb 2022*

*UC San Diego, Ophthalmic Informatics Group, Jan 2022*

*University of Wisconsin-Madison, CIBM Seminar, Oct 2021*

*Oregon Health & Science University, Casey Eye Institute, Jun 2019*

The Design and Use of Computational Notebooks

*University of Washington, Interactive Data Lab, Dec 2018*  
*Oregon Health & Science University, Medical Informatics, Nov 2018*

Field Methods in Human Computer Interaction  
*UC San Diego, COGS 13: Field Methods, May 2018*

Exploration and Explanation in Computational Notebooks  
*UC Berkeley, Data Science Institute, Dec 2017*

Cognitive Science & Design  
*UC San Diego, COGS 1: Intro to Cognitive Science, Nov 2016*  
*UC San Diego, COGS 1: Intro to Cognitive Science, Oct 2015*

#### **OTHER EMPLOYMENT**

Summer 2012	Amazon <i>UX Research Intern</i> Conducted usability studies of shopping interfaces for clothing and home goods
Summer 2012	PATH <i>UX Research Intern</i> Evaluated usability of inventory software for medical equipment
Summer 2011	Carnegie Mellon University, QoLT Center <i>Research Intern</i> Conducted research on the design of interfaces for controlling robot teams
Summer 2010	Intel Research <i>User Research Intern</i> Conducted research on the design of home assistive robot