

ADAM RULE

University of Wisconsin–Madison
Room 4217 Helen C. White Hall
600 N Park St
Madison, WI 53706

adam.rule@wisc.edu
adamrule.com

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, 2nd 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

- 6/2023 - 5/2024 EXTRAMURAL
 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**, Ryanne 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, 2ND 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 @ Zoon
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
UX Research Intern
Conducted usability studies of shopping interfaces for clothing and home goods
- Summer 2012 PATH
UX Research Intern
Evaluated usability of inventory software for medical equipment
- Summer 2011 Carnegie Mellon University, QoLT Center
Research Intern
Conducted research on the design of interfaces for controlling robot teams
- Summer 2010 Intel Research
User Research Intern
Conducted research on the design of home assistive robot