CURRICULUM VITAE

ERIK H. TRAINER, PHD

Institute for Software Research
Carnegie Mellon University
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EDUCATION

Ph.D., Information and Computer Science (3.97 GPA)   2012
University of California, Irvine
- Advisor: David Redmiles
  - Dissertation: *Supporting the Development of Trust in Globally Distributed Software Teams: The Impact of Visualized Collaborative Traces on Perceived Trustworthiness*

M.S., Information and Computer Science (4.0 GPA)   2007
University of California, Irvine

B.S., Information and Computer Science (3.6 GPA)   2005
University of California, Irvine

RESEARCH AND TEACHING INTERESTS

My goal is to create practices and tools that help people engaged in technical work build and sustain productive relationships.

- *Collaborative software development*: free and open-source software (FOSS), global software development, trust, e-mentoring
- *User-centered design of information and communication technology*: usability methods, human-computer interaction, computer supported cooperative work and social computing, empirical methods
- *Cyberinfrastructure and e-Science*: scientific software sharing, distributed scientific collaboration, community code engagements (e.g., hackathons, summers of code)

EMPLOYMENT

Carnegie Mellon University – Post-Doctoral Research Associate   2013-2016
- Improving satisfaction and trust in online communities of developers and users

I designed and implemented short- and long-term research strategies to promote effective collaboration between developers and users of open-source software who seldom meet face-to-face. I collected data from over 60 remote and face-to-face interviews, surveys, and in situ observations.

I analyzed the data using a combination of qualitative (e.g., coding) and quantitative (e.g., statistical analysis) methods. This led to establishing concrete practices to facilitate productive, satisfying, and fulfilling interactions between developers and users. Examples include using online tools prior to build familiarity, and brainstorming sessions to include all stakeholders' ideas. I also mentored junior researchers on my team in user research methods such as interviews and surveys.

University of California, Irvine – Graduate Student Researcher   2007-2012
- Promoting trust among remote workers, particularly in multinational corporations

I was part of a team analyzing over 50 interviews from 5 multinational, multisite IT organizations. We found that breakdowns in trust were frequent and strained interpersonal relationships. To understand the cause and impact, I initiated a literature review. I found that reduced contextual information in multisite collaborations leads people to make negative assumptions about their colleagues' problematic behavior (e.g., failing to deliver work on time), which in turn erodes trust.

To reduce this negative bias and promote trust, I developed a tool that visualized important contextual information about a collaborator. I wireframed multiple versions of the user interface, using principles from information visualization. By comparing and refining the designs using heuristic evaluations and cognitive walkthroughs, I implemented the highest performing design in JavaScript. I then designed a controlled experiment and moderated 40 user tests using think-aloud. Using statistical methods, I showed that the tool allowed users to make better trustworthiness judgments of remote colleagues (compared to without it) and was highly usable.

Microsoft – Summer Research Intern   2009
- Developing an enhanced file sharing tool for Microsoft internal research groups

I found that while members of Microsoft research groups are open to sharing some files publicly, they prefer to keep their annotations and notes private. I developed a tool that incorporated multiple user scenarios to recognize, classify and automate the file sharing.

I built a C# application on top of Cimbiosys—a file replication platform. My application replicated papers and references among all group members' devices, but only replicated one's own annotations on their private devices. The tool was presented to the researchers who decided to keep it for their future use.

WallStreet University, Inc. – Course Designer   2004-2009
- Using user experience research to increase sales by 12% and optimize production line

I created LoFi mockups in Adobe Illustrator for the design of an investor education course, working closely with developers, subject matter experts, and managers. This resulted in a HiFi prototype built in Adobe Flash. I presented it to senior leadership, and the prototype was successfully incorporated into the company's product line. In this role, I initiated A/B testing at the company, comparing two different versions of sales text on our product's webpage. I showed that the second version resulted in a 12% increase in sales.

SKILLS

UX Methods: Usability Testing, Survey Design and Implementation, Heuristic Evaluation, Cognitive Walkthrough, Wireframing, Think-Aloud Protocol, Usability Research, Prototyping, Interviewing, A/B Testing, Information Visualization, Social Computing
Data Analysis: Quantitative Analysis (R, JMP), Qualitative Analysis (Dedoose, ATLAS.ti), SQL
Programming Languages: Java, JavaScript, C#, PHP
Libraries and Frameworks: D3.js, jQuery, Bootstrap

PROFESSIONAL AFFILIATIONS

ACM Special Interest Group on Software Engineering (SIGSOFT)   2010-Present
Institute of Electrical and Electronics Engineers (IEEE)   2008-Present
Association of Computing and Machinery (ACM)   2005-Present

GRANTS

Member of grant-writing team. *Enhancing Scientific Software Sustainability Through Community Code Engagements*, Jim Herbsleb, PI. Alfred P. Sloan Foundation (2015-2018). $1,098,493

Member of grant-writing team. *Enabling Trust in Virtual Teams for Increased Innovation and Effectiveness*, David Redmiles, PI. (IIS-0943262). National Science Foundation Virtual Organizations as Sociotechnical Systems Program (2009-2012). $399,829

Member of grant-writing team. *Towards a Socio-technical Dependency Visualization Infrastructure for Jazz*, David Redmiles, PI. IBM Jazz Innovation Awards Program (2008).

HONORS & AWARDS

Mentor to Graduate Students, Institute for Software Research   2013-2015
Undergraduate Outreach Representative, School of Information   2011
& Computer Science
IBM Jazz Innovation Grant Recipient, School of Information   2008
& Computer Science
Undergraduate Research Opportunities Program Fellow, University of   2005
California, Irvine
Golden Key International Honor Society, University of California, Irvine 2002-2005
Dean's Honor List, University of California, Irvine   2002-2005

COMMUNITY SERVICE

Proceedings Chair
ICGSE (2017)

Posters Chair
ICGSE (2016)

Member, Organizing Committee
ICGSE (2016, 2017)
UC Irvine Graduate Student Symposium (2008)

Member, Program Committee
ICGSE (2016, 2017)
IS-EUSD (2013)
CHASE Workshop at ICSE (2013)

Reviewer for Conferences
CHI (2017)
CSCW (2015, 2017)
ICGSE (2016)
CHASE Workshop at ICSE (2013)
IS-EUSD (2013)
VL/HCC (2008)

Reviewer for Journals
Empirical Software Engineering (2017)
Journal of Visual Languages and Computing (2016)
Journal of Systems and Software (2016)
Institution of Engineering and Technology (IET) Software (2014, 2015)
Information and Software Technology (IST) (2014)
Journal of Open Research Software (JORS) (2014)
Journal of Internet Services and Applications (2014, 2016, 2017)
ACM Transactions on Software Engineering and Methodology (TOSEM) (2013)

Reviewer for Books
Springer; Collaborative Software Engineering: Concepts and Techniques (2010)

Conference Student Volunteer
CSCW (2010)
ASE (2005)

Undergraduate Outreach Representative
University of California, Irvine (2010, 2011)

Rhythm Guitarist
Orange Solution (2009-2012)

PUBLICATIONS

CONFERENCES

Trainer, E., Kalyanasundaram, A., Herbsleb, J.D. (2017). E-Mentoring for Software Engineering: A Socio-technical Perspective, In *Proceedings of the International Conference on Software Engineering* (ICSE 2017, Buenos Aires, Argentina), in press.

Filippova, A., **Trainer, E.**, Herbsleb, J.D. (2017). From Diversity by Numbers to Diversity as Process: Supporting Inclusiveness in Software Teams with Brainstorming, In *Proceedings of the International Conference on Software Engineering* (ICSE 2017, Buenos Aires, Argentina), in press.

Trainer, E., Kalyanasundaram, A., Chaihirunkarn, C., Herbsleb, J.D. (2016). How to Hackathon: Socio-technical Tradeoffs in Brief, Intensive Collocation, In *Proceedings of the ACM Conference on Computer-Supported Cooperative Work & Social Computing* (CSCW 2016, San Francisco, CA), pp. 1118-1130.

Trainer, E., Chaihirunkarn, C., Kalyanasundaram, A., Herbsleb, J.D. (2015). From Personal Tool to Community Resource: What's the Extra Work and Who Will Do It? In *Proceedings of the ACM Conference on Computer-Supported Cooperative Work & Social Computing* (CSCW 2015, Vancouver, BC, Canada), pp. 417-430.

Trainer, E., Chaihirunkarn, C., Kalyanasundaram, A., Herbsleb, J.D. (2014). Community Code Engagements: Summer of Code & Hackathons for Community Building in Scientific Software, In *Proceedings of the ACM Conference on Supporting Group Work* (GROUP 2014, Sanibel Island, FL), pp. 111-121.

Al-Ani, B., Bietz, M., Wang, Y., **Trainer, E.**, Koehne, B., Marczak, S., Redmiles, D.F., Prikladnicki, R. (2013). Globally Distributed System Developers: Their Trust Expectations and Processes, In *Proceedings of the ACM Conference on Computer-Supported Cooperative Work and Social Computing* (CSCW 2013, San Antonio, TX), pp. 563-573.

Al-Ani, B., Wang, Y., Marczak, S., **Trainer, E.**, and Redmiles, D.F. (2012). Distributed Development Teams and Non-Use of the Web 2.0 Technologies: A Proclivity Framework, In *Proceedings of the International Conference on Global Software Engineering* (ICGSE 2012, Porto Alegre, Brazil), pp. 104-113.

Trainer, E. and Redmiles, D.F. (2012). Foundations for the Design of Visualizations that Support Trust in Distributed Teams, In *Proceedings of the International Working Conference on Advanced Visual Interfaces* (AVI 2012, Capri, Italy), pp. 34-41.

Al-Ani, B., **Trainer, E.**, Redmiles, D.F., and Simmons, E. (2012). Trust and Surprise in Distributed Teams: Towards an Understanding of Expectations and Adaptations, In *Proceedings of the ACM International Conference on Intercultural Collaboration* (ICIC 2012, Bengaluru, India), pp. 97-106.

Trainer, E., Quirk, S., de Souza, C.R.B., and Redmiles, D.F. (2008). Analyzing a Socio-Technical Visualization Tool Using Usability Inspection Methods, In *Proceedings of the IEEE Symposium on Visual Languages and Human Centric Computing* (VL/HCC 2008, Herrsching am Ammersee, Germany), pp. 78-81.

de Souza, C.R.B., Quirk, S., **Trainer, E.**, and Redmiles, D.F. (2007). Supporting Collaborative Software Development through the Visualization of Socio-Technical Dependencies, In *Proceedings of the ACM Conference on Supporting Group Work* (GROUP 2007, Sanibel Island, FL), pp. 147-156.

WORKSHOP AND POSITION PAPERS

Trainer, E. (2016). Hackathons, Codefests, and Sprints: A Case for Attention in CSCW on Community Coding Events, Research "Boaster" Presented at *Human Computer Interaction Consortium Workshop* (HCIC 2016, Watsonville, CA), 8 pp.

Trainer, E. and Herbsleb, J.D. (2014). Beyond Code: Prioritizing Issues, Sharing Knowledge, and Establishing Identity at Hackathons for Science, In *Workshop on Sharing, Re-Use and Circulation of Resources in Cooperative Scientific Work*, held in conjunction with the *ACM Conference on Computer-Supported Cooperative Work & Social Computing* (CSCW 2014, Baltimore, MD), 2 pp., available at http://dx.doi.org/10.6084/m9.figshare.964924.

Trainer, E., Chaihirunkarn, C., Herbsleb, J.D. (2013). The Big Effects of Short-term Efforts: A Catalyst for Community Engagement in Scientific Software, In *Workshop on Sustainable Software for Science: Practices and Experiences* (WSSSPE), held in conjunction with the *International Conference for High Performance Computing, Networking, Storage and Analysis* (SC 2013, Denver, CO), 4 pp., available at http://dx.doi.org/10.6084/m9.figshare.790754.

Wang, Y., **Trainer, E.**, Al-Ani, B., Redmiles, D., and Marczak, S. (2012). Attitude and Usage of Collaboration Tools in GSE: A Practitioner Oriented Theory, In *Proceedings of the International Workshop on Cooperative and Human Aspects of Software Engineering* (CHASE), held in conjunction with the *International Conference on Software Engineering* (ICSE 2012, Zurich, Switzerland), pp. 135-137.

Al-Ani, B., Marczak, S., **Trainer, E.**, Redmiles, D.F., and Prikladnicki, R. (2012). Distributed Developers' Perspectives of Web 2.0 Technologies in Supporting the Development of Trust, In *Future of Collaborative Software Development Workshop*, held in conjunction with the *ACM Conference on Computer-supported Cooperative Work* (CSCW 2012, Seattle, WA).

Trainer, E., Al-Ani, B., and Redmiles, D.F. (2011). Impact of Collaborative Traces on Trustworthiness, In *Proceedings of the International Workshop on Cooperative and Human Aspects of Software Engineering* (CHASE), held in conjunction with the *International Conference on Software Engineering* (ICSE 2011, Honolulu, HI), pp. 40-47.

Trainer, E. (2008). Connecting the Social and Technical Aspects of Computing with Visualization, In *Doctoral Symposium of the IEEE Symposium on Visual Languages and Human Centric Computing* (VL/HCC 2008, Herrsching am Ammersee, Germany), pp. 272-273.

Trainer, E. and Redmiles, D.F. (2008). Towards an Infrastructure for Software Visualization Research, In *International Workshop on Infrastructure for Research in*

Collaborative Software Engineering (IReCoSE), held in conjunction with the *International Symposium on the Foundations of Software Engineering* (FSE 2008, Altanta, GA), available at http://home.segal.uvic.ca/~IRCoSE-2008/.

Al-Ani, B., **Trainer, E.**, Ripley, R., Sarma, A., van der Hoek, A., Redmiles, D.F. (2008). Continuous Coordination within the Context of Cooperative and Human Aspects of Software Engineering, In *Proceedings of the International Workshop on Cooperative and Human Aspects of Software Engineering* (CHASE), held in conjunction with the *International Conference on Software Engineering* (ICSE 2008, Leipzig, Germany), pp. 1-4.

Al-Ani, B., Sarma, A., Bortis, G., Almeida da Silva, I., **Trainer, E.**, van der Hoek, A., Redmiles, D. (2006). Continuous Coordination (CC): A New Collaboration Paradigm, In *Proceedings of the Workshop on Supporting the Social Side of Large Scale Software Development*, held in conjunction with the *ACM Conference on Computer-Supported Cooperative Work* (CSCW 2006, Banff, Alberta, Canada), pp. 4-10.

Trainer, E., Quirk, S., de Souza, C. R. B., Redmiles, D.F. (2005). Bridging the Gap between Technical and Social Dependencies with Ariadne, In *Proceedings of the OOPSLA Workshop on Eclipse Technology Exchange* (ETX 2005, San Diego, CA), pp. 26-30.

de Souza, C.R.B., Dourish, P., Redmiles, D.F., Quirk, S., and **Trainer, E.** (2004). From Technical Dependencies to Social Dependencies, In *Workshop on Social Networks*, held in conjunction with the *ACM Conference on Computer-Supported Cooperative Work* (CSCW 2004, Chicago, IL), available at http://www.ischool.washington.edu/mcdonald/cscw04/.

JOURNALS

Trainer, E., Chaihirunkarn, C., Herbsleb, J.D. (2014). The Big Effects of Short-term Efforts: Mentorship and Code Integration in Open Source Scientific Software, *Journal of Open Research Software*, vol. 2, no. 1, 2014, available at http://dx.doi.org/10.5334/jors.bc.

Al-Ani, B., Redmiles, D., van der Hoek, A., Alvim, M., da Silva, I., Mangano, N., **Trainer, E.**, Sarma, A. (2008). Continuous Coordination within Software Engineering Teams: Concepts and Tool Support, *Journal of Computer Science and Engineering in Arabic, Special Issue on Software Engineering*, vol. 1, no. 3, 2008, pp. 10-33.

Redmiles, D., van der Hoek, A., Al-Ani, B., Hildenbrand, T., Quirk, S., Sarma, A., Silveira Silva Filho, R., de Souza, C., **Trainer, E.** (2007). Continuous Coordination: A New Paradigm to Support Globally Distributed Software Development Projects, *Wirtschaftsinformatik, Special Issue on the Industrialization of Software Development*, vol. 49, 2007, pp. 28-38.

BOOK CHAPTERS

Sarma, A., Al-Ani, B., **Trainer, E.**, Silva Filho, R.S., da Silva, I., Redmiles, D., van der Hoek, A. Continuous Coordination Tools and their Evaluation, in I. Mistrík, J. Grundy, A. van der Hoek, J. Whitehead (eds.), *Collaborative Software Engineering*, Springer, Ch. 8, pp. 153-178.

TECHNICAL REPORTS

Trainer, E., Quirk, S., de Souza, C.R.B., and Redmiles, D.F. (2012). Usability Inspection Method-based Analysis of a Socio-Technical Visualization Tool, *Technical Report UCI-ISR-12-6*. University of California, Irvine, Institute for Software Research.

Trainer, E. and Redmiles, D.F. (2010). Initial Successes and Failures Prototyping Socio-technical Visualizations Using a Collaboration Infrastructure, *Technical Report UCI-ISR-10-5*. University of California, Irvine, Institute for Software Research.

Trainer, E. and Redmiles, D.F. (2009). A Survey of Visualization Tools that Promote Awareness of Software Development Activities, *Technical Report UCI-ISR-09-5*. University of California, Irvine, Institute for Software Research.

PROFESSIONAL PRESENTATIONS

Trainer, E., Chaihirunkarn, C., Kalyanasundaram, A., Herbsleb, J.D. (2014). Hackathons for Scientific Software: How and When do they Work? Presentation at *Science of Team Science Conference* (SciTS 2014, Bethesda, MD).