

## Education

**Doctor of Philosophy, Learning Sciences, 2013**

University of Washington, Seattle, WA

**Dissertation:** *The Quiet Professional: An investigation of U.S. military Explosive Ordnance Disposal personnel interactions with everyday field robots.*

**Committee Chair:** John D. Bransford, Ph.D.

**Master of Science, Technical and Scientific Communication; 2007**

University of Washington, Seattle, WA

**Master of Science, Technical Communication; 2004**

Concentration: Human-Computer Interaction

Rensselaer Polytechnic Institute, Troy, NY

**Bachelor of Arts, Communication; 1999**

Concentration: Film, Radio, and Television Theory

University of Wisconsin, Madison, WI

## Research Summary

My research discovers and describes patterns of human interaction experiences with emerging technologies and situates them within larger cultural contexts and social systems to offer a framework for understanding what phenomena are occurring, explain why these interactions are playing out the way they are, and predict future emerging patterns of human behavior based on these findings. My work is scaffolded by an interdisciplinary approach used to find ways of understanding the complex human behavior, actions, and cultural influences related to human-technology interactions, and pointing to actionable solutions as well as new directions for innovative work. More broadly, these findings can be applied to the development of technologies that are effective and improve outcomes of human-technology collaborative/team or training situations.

Keywords used in my research: Attachment, Attachment theory, Communication, Culture, Cultural studies, Design, Emerging technologies, Emotion, Ethics, Human Factors, Human-Robot Interaction, Interaction Design, Learning Sciences, Military, Robotics, Social Robotics, User-Centered Design, User Experience.

## Publications

(Name appears as both "J. Carpenter" and "J. Hillan.")

### **Book**

Carpenter, J. (2016). *Culture and Human-Robot Interaction in militarized spaces: A war story*. UK: Ashgate/Routledge.

### **Book Chapters**

Carpenter, J. (2017). Deus Sex Machina: Loving Robot Sex Workers, and the allure of an insincere kiss. In J. Danaher & N. McArthur (Eds.), *Sex Robots: Social, Legal and Ethical Implications*. Cambridge, MA: MIT Press.

Carpenter, J. (2013). Just doesn't look right: Exploring the impact of humanoid robot integration into Explosive Ordnance Disposal Teams. In R. Luppicini (Ed.), *Handbook of Research on Technoself: Identity in a Technological Society* (pp. 609-636). Hershey, PA: Information Science Publishing. doi:10.4018/978-1-4666-2211-1.

### **Manuscripts in Preparation/Submitted for Review**

Carpenter, J. (2018). Dark patterns: Designing human-robot teams for war. In E. De Visser, R. Pak & E. Rovira [Eds.] *Everyday robotics*. [Manuscript in preparation].

Carpenter, J. (Submitted for review). Kill switch: The evolution of road rage in an increasingly AI car culture. Funded under *Ethics + Emerging Sciences Group (California Polytechnic State University)*; National Science Foundation, Grant No. 1522240.

Carpenter, J. (2017). The Naked Android: Robots, sex, and synthetic love. [Book]. (In preparation).

### **Peer-Reviewed Journal Articles**

Carpenter, J. Davis, J., Erwin-Stewart, N., Lee, T., Bransford, J. & Vye, N. (2009). Gender representation in humanoid robots for domestic use. *International Journal of Social Robotics (special issue)*, 1(3), 261-265. The Netherlands: Springer.

Reichenbach, J., Bartneck, C., & Carpenter, J. (2008). The Carrot and the stick - The role of praise and punishment in human-robot interaction. *Interaction Studies: Social Behaviour and communication in biological and artificial systems; special issue of on "Human and robot interactive communication,"* 9(2), 179-203. Oxford, UK: Ingenta.

Hillan, J. (October, 2003). Physician use of patient-centered Web logs and journals. *Clinical Medicine and Research*, 1(4), 333-334. Stanford, CA: Stanford University Libraries.

Hillan, J. (July, 2003). PatchWorx: Connecting ill and disabled children in an online community. *Clinical Medicine and Research*, 1(3), 259-260. Stanford, CA: Stanford University Libraries.

### **Peer-Reviewed Conference Proceedings - Full Papers**

- Carpenter, J. (2009). Why send the Terminator to do R2D2s job?: Designing androids as rhetorical phenomena. *Proceedings of HCI 2009: Beyond Gray Droids: Domestic Robot Design for the 21st Century*. Cambridge, UK. Sept. 1.
- Carpenter, J., Davis, J., Erwin-Stewart, N., Lee, T., Bransford, J. & Vye, N. (2008). Invisible machinery in function, not form: User expectations of a domestic humanoid robot. *Proceedings of 6th conference on Design and Emotion*. Hong Kong, China.
- Carpenter, J., Eliot, M. & Schultheis, D. (2006). Machine or friend: understanding users' preferences for and expectations of a humanoid robot companion. *Proceedings of 5th conference on Design and Emotion*. Göteborg, Sweden.
- Reichenbach, J., Bartneck, C., & Carpenter, J. (2006). Well done robot! The importance of praise and presence in human-robot collaboration. *Proceedings of RO-MAN 06: The 15th IEEE International Symposium on Robot and Human Interactive Communication*, 86-90. Hatfield, UK.
- Bartneck, C., Reichenbach, J., Carpenter, J. & Hupfeld, F. (2006). Use of praise and punishment in human-robot collaborative teams. *Proceedings of RO-MAN 06: The 15th IEEE International Symposium on Robot and Human Interactive Communication*, 177-182. Hatfield, UK.

### **Peer-Reviewed Conference Proceedings - Short Papers and Presentations**

- Carpenter, J., Davis, J., Erwin-Stewart, N., Lee, T., Bransford, J. & Vye, N. (2008). *Gender representation in humanoid robots for domestic use*. 1st International Conference on Human-Robot Personal Relationships. June 12-13. Maastricht, The Netherlands.
- Carpenter, J., Eliot, M. & Schultheis, D. (2006). The Uncanny Valley: Making human-nonhuman distinctions. *Proceedings of the 5th International Conference on Cognitive Science*, 81-82. Vancouver, B.C., Canada.
- Carpenter, J. (2006). *Exploring Human-Centered Design in Human Robot Interaction*. Presented at HRI Young Researchers Workshop, in conjunction with HRI 2006. Salt Lake City, UT.
- Hillan, J. (2005). The necessity of enforcing multidisciplinary research and development of embodied Socially Intelligent Agents. *Proceedings of AISB '05*. (British) Society for the Study of Artificial Intelligence and the Simulation of Behaviour, 133-140. Hertfordshire, UK.

### **Other Publications**

- Carpenter, J. (2014, September). The existential robot: Living with robots may teach us to be better humans. *Issues*, 108, 39-42.
- Carpenter, J. (2017, September). Shaping the future of war: The important questions. *LA Review of Books Digital Edition*, 84-89. The digital revolution: Debating the promise and perils of the Internet in the last years of the Obama administration. (Eds. M. Pridmore-Brown & J. Crockett).

## ***Invited Presentations***

Carpenter, J. (2016, November 3). The robot is the medium: Our ethical responsibilities as Makers. 6th Digital Ethics Symposium. Loyola University. *Chicago, IL.*

Carpenter, J. (2014, May 14). *DroneU: The emotional consequences of operating a military drone* [Podcast].

Carpenter, J. (2014). *The Robot Accommodation Dilemma: Human-field robot interactions, attachment, and operator decision-making*. IDGA Counter-IED Training Forum. Arlington, VA.

## **Research Experience**

### **Research Scientist, Associate Research and Development Principal**

#### **Digital Experiences Lab, Accenture, San Jose/San Francisco, CA, 2018-Present**

Human-robot interaction and human-emerging technology interaction applied research in the Digital Experience laboratories. **Accenture** is a leading global professional services company providing a range of strategy, consulting, digital, technology & operations services and solutions

### **Research Fellow, Ethics + Emerging Sciences Group (Patrick Lin, Ph.D.)**

#### **California Polytechnic State University, San Luis Obispo, CA, 2015-Present**

Ethics, risk, and social concern assessment. Publishing projects. Engage policymakers, business, academia, as well as the broader public on key issues in science and society.

### **Assistant Director, Engineering Communication Program**

#### **University of Washington, Seattle, WA, 2007-2008**

Managed Engineering Writing Center (EWC). Developed all new original course curriculum and taught *Introduction to Theories, Methods, and Materials of Writing Center Tutoring* (TC 499) course. Scheduled, tracked usage, offered workshops, and visited classes to promote the EWC services. Assisted the Director with TA support and training (for 231 and 333 TAs).

### **Curriculum Design and Engineering Writing (Karen Kasonic)**

#### **University of Washington, Seattle, WA, 2006-2007**

Researched and developed curriculum for grant writing workshops hosted by Department of Technical Communication. Reviewed current TC 333 curriculum and collaborated to develop new teaching materials. Collected, organized and archived original classroom materials developed by TC 333 Teaching Associates, including lecture notes and supplementary materials such as PowerPoint and instructions for group exercises.

### **Internet-Based Research Efficacy/Examining Computer Supported Cooperative Work (Jan Spryridakis, Ph.D.), University of Washington, Seattle, WA, 2005**

Conducted Web-based study on the efficacy of electronically delivered information. Worked on refining an Internet-based research tool, study of information design on users' behavior and performance in computer supported cooperative work environments, with a specific focus on the assessment of wikis. Identified questions and subjects for study, read relevant literature and collaborated on experiment design.

**Graduate Research Associate, (Jonathan Drezner, M.D.)**

**University of Washington, Seattle, WA, 2005**

Developed the first iteration of AEDSports.com, a data-gathering site for Dr. Drezner's research. Assembled Web design team and supervised two undergraduate Research Assistants. Managed the development of two Web sites: (a) a Web-based survey on NCAA AED use and (b) a Web-based interface for online survey database administration.

**Computer Games (Beth Kolko, Ph.D.)**

**University of Washington, Seattle, WA, 2005**

Researched the cultural aspects of games, including a project of player-avatar identification in EverQuest.

## Teaching Experience

**Visiting Lecturer, Robotics and Social Inclusion, Designskolen Kolding,**

**Kolding, DK, January 18-22**

Participated during the first week of the "Robotics and Social Inclusion" course. Lectures included "Culture and human-robot interaction in militarized spaces," "Romantic relationships with Robotic Sex Workers" and "An introduction to qualitative research methods."

**Teaching Assistant, College of Education, University of Washington, Seattle, WA, 2009-2011**

Managed the College of Education Writing Center. Created center schedules, tracked usage, offered writing workshops, and visited classes to promote the writing center services. Developed workshops for undergraduate and graduate students in the College of Education.

**Teaching Assistant, College of Education, University of Washington, Seattle, WA, 2008-2009**

Collaborated on curriculum development and led discussions for "Math Methods, Dilemmas of Teaching and Learning, Arts & Technology" and "Teaching for Learning & Adolescent Development" courses, part of the Teacher Education Program.

**Teaching Assistant, College of Engineering, University of Washington, Seattle, WA, 2008**

Co-taught "Empirical Traditions in Technical Communication" with Dr. Tom Williams (TC 502). Collaborated on curriculum development; lead discussions. Graded all course work.

**Teaching Assistant, College of Engineering, University of Washington, Seattle, WA, 2007**

"Introduction to Theories, Methods, and Materials of Writing Center Tutoring" (TC 499). Developed curriculum, wrote syllabus, taught all classes.

**Teaching Assistant, College of Engineering, University of Washington, Seattle, WA  
2005-2007 & 2008**

"Advanced Technical Writing and Oral Presentation" (TC 333). Taught all lectures. Developed course materials and learning activities, met with students, and graded all written work and oral presentations.

**Teaching Assistant, College of Engineering, University of Washington, Seattle, WA, 2004, 2008**

"Introduction to Technical Writing" (TC 231). Taught all lectures. Collaborated in curriculum and exam development, met with students and graded all written work, including mid-term and final exam papers.

## Selected Media Coverage

Ackerman, A. (2013, September 19). Soldiers can get emotionally attached to robots, and that may not be a good thing. *IEEE Spectrum*. Retrieved from <http://spectrum.ieee.org/autoton/robotics/military-robots/soldiers-can-get-emotionally-attached-to-robots-and-that-may-not-be-a-good-thing>

Baggaley, K. (2017, June 2). Sex bots are coming, and they're not as skeezy as you think. *NBCMach*, NBC News. Retrieved from <https://www.nbcnews.com/mach/innovation/sex-robots-are-coming-they-re-not-skeezy-you-think-n767531>

Boverman, P. (2017, November 27). Ich kann es gar nicht erwarten, dich kennenzulernen: Eine neue App baut eine Beziehung zu seinem Nutzer auf: Replika, der künstlich intelligente Chatbot. *Tages Anzeiger*. Zurich, SU. Retrieved from <https://www.tagesanzeiger.ch/digital/internet/Ich-kann-es-gar-nicht-erwarten-dich-kennenzulernen/story/14202074>

Buck, D. (2018, Jan/Feb). EOD+AI: Working with robots. *The Detonator*. International Association of Bomb Technicians and Investigators (IABTI): Fredricksburg, VA. Retrieved from [http://www.jgcarpenter.com/pdfs/eod\\_ai\\_detonator2018.pdf](http://www.jgcarpenter.com/pdfs/eod_ai_detonator2018.pdf)

Byers, M. (2014, October 27). Learning to live with robots. *Cosmos*. Toorak, AU. Retrieved <https://cosmosmagazine.com/the-future/learning-live-robots>

Chayka, K. (2014, 18 February). As military robots increase, so does the complexity of their relationship with soldiers. *Newsweek*. Retrieved from <http://mag.newsweek.com/2014/02/21/military-robots-increase-complexity-relationship-soldiers.html>

Could you kill a robot? (2017, July 10). Host, Shankar Vedantam. [Radio broadcast]. *Hidden Brain*. NPR. Denver, CO. Retrieved <http://www.npr.org/templates/transcript/transcript.php?storyId=536043276>

Daileda, C. (2013, September 18). Soldiers feel loss, anger, when their robots die. *Mashable*. Retrieved from [http://mashable.com/2013/09/18/robot-like-pets/#\\_8AvdCkfqSq2](http://mashable.com/2013/09/18/robot-like-pets/#_8AvdCkfqSq2)

Episode 226: Falling in love with artificial intelligence. Context-aware computing and common ground. Soldiers and robots. The beauty of glitch art. [Radio broadcast]. *Canadian Broadcasting Company*. Retrieved from <http://www.cbc.ca/radio/spark>

Estes, A.C. (2013, October 30). We aren't doing enough to prepare ourselves for robot love. *Gizmodo*. Retrieved from <http://gizmodo.com/we-arent-doing-enough-to-prepare-ourselves-for-robot-l-1455275396>

Franco, M. (2017, August 10). Muñecas sexuales: Entre el deseo, el afecto y la inteligencia artificial. CNet en Español. Retrieved from <https://www.cnet.com/es/noticias/munecas-sexuales-realdoll-robots/>

- Fung, B. (2013, November 11, updated). What'll happen to Veterans' Day when many of our warriors are drones? *The Washington Post*. Retrieved from <http://www.washingtonpost.com/blogs/the-switch/wp/2013/11/11/whatll-happen-to-veterans-day-when-many-of-our-warriors-become-drones/>
- Garber, M. (2013, September 20). Funerals for fallen robots. *The Atlantic*. Retrieved from <http://www.theatlantic.com/technology/archive/2013/09/funerals-for-fallen-robots/279861/>
- Graham, J. *Erica, the humanoid robot, is chatty, but still has a lot to learn*. USA Today. Retrieved from <https://www.usatoday.com/story/tech/talkingtech/2018/02/19/erica-humanoid-robot-chatty-but-still-has-lot-learn/352281002/>
- Gruber, A. (2017, November 1). Gefühle für Maschinen: Wenn die Roboter kommen, werden wir sie lieben. *Der Spiegel*. Retrieved <http://www.spiegel.de/netzwelt/gadgets/anthropomorphismus-koennen-menschen-roboter-lieben-a-1128553.html>
- Hsu, J. (2015, March 15). Robot funerals reflect our humanity. *Discover (blogs)*. Retrieved from <http://blogs.discovermagazine.com/lovesick-cyborg/2015/03/15/robot-funerals-reflect-our-humanity/#.WVvk5DMbMyt8>
- Human armed forces and the likelihood of comradeship with their military robots*. (2016, October 25). Lincoln Theology Institute. Manchester: UK. Retrieved from <http://lincolnthologicalinstitute.com/project-blog/2016/10/25/human-armed-forces-and-the-likelihood-of-comradeship-with-th.html>
- Kee, E. (2013, September 20). Some soldiers affected emotionally when their robots go “boom.” *Ubergizmo*. Retrieved from <http://www.ubergizmo.com/2013/09/some-soldiers-affected-emotionally-when-their-robots-go-boom/>
- Kemsley, T. (2013, September 20). Study investigates whether soldiers' attachment to robots affects mission outcomes. *Nature World News*. Retrieved from <http://www.natureworldnews.com/articles/4082/20130920/study-investigates-whether-soldiers-attachment-robots-affects-mission-outcomes.htm>
- Lin, P. (2016, February 1). Relationships with robots: Good or bad for humans? *Forbes*. Retrieved from <http://www.forbes.com/sites/patricklin/2016/02/01/relationships-with-robots-good-or-bad-for-humans/#1c0c518b291e>
- Lubbadeh, J. (2017, September). Robbi, wir müssen reden! *Bild der Wissenschaft (54)*, 26-30.
- Olsen, W. (2013, September 20). My robot friend? Researcher studies servicemembers' attachment to field robots. *Stars & Stripes*. Retrieved <https://www.stripes.com/blogs/stripes-central/stripes-central-1.8040/my-robot-friend-researcher-studies-servicemembers-attachment-to-field-robots-1.242299#.WbRSrq3MxsM>
- Palus, S. (2014, July 10). The military is funding the creation of adorable robots. Retrieved from [http://www.slate.com/articles/technology/future\\_tense/2014/07/flipperbot\\_rhex\\_military\\_robots\\_get\\_adorable\\_and\\_creepy.html](http://www.slate.com/articles/technology/future_tense/2014/07/flipperbot_rhex_military_robots_get_adorable_and_creepy.html)
- Pearl, M. (2015, August 3). A brief history of mankind's inhumanity to robots. *VICE*. Retrieved <https://www.theguardian.com/technology/2015/mar/16/robots-torture-sxsw>

- Reuter, T. & Syed, N. [Producers]. (14 May, 2014). [Podcast]. Drone U: The emotional consequences of operating a military drone. *Slate Magazine*. Retrieved from [http://www.slate.com/blogs/future\\_tense/2014/05/14/drone\\_u\\_julie\\_carpenter\\_on\\_the\\_emotional\\_consequences\\_of\\_operating\\_military.html](http://www.slate.com/blogs/future_tense/2014/05/14/drone_u_julie_carpenter_on_the_emotional_consequences_of_operating_military.html)
- Robots can 'trick' humans into loving them. (2013, September 22). *The Economic Times*. Retrieved <http://economictimes.indiatimes.com/robots-can-trick-humans-into-loving-them/articleshow/22894924.cms>
- Rometko, M. (2016, 20 May). Les dangers de l'empathie artificielle. *EchoSciences-Grenoble*. Retrieved <https://www.echosciences-grenoble.fr/communautes/monstrueux/articles/les-dangers-de-l-empathie-artificielle>
- Rutkin, A. (2015, October 6). Not like us: How should we treat the robots that we live alongside? *New Scientist*. Retrieved from <https://www.newscientist.com/article/dn28293-not-like-us-how-should-we-treat-the-robots-we-live-alongside/>
- Silver, C. (2016, April 7). VR sex robots may be coming soon. *Forbes*. Retrieved from <https://www.forbes.com/sites/curtissilver/2016/04/07/vr-sex-robots-may-be-coming-soon/#62fc097c2152>
- Sloat, S. (2017, February 1). Alexa is America's favorite teddy bear for adults. *Inverse Science*. <https://www.inverse.com/article/26175-artificial-intelligent-smart-home-google-assistant-amazon-alexa>
- Subbaraman, N. (2013, September 28). Soldiers <3 robots: Military robots get awards, nicknames, funerals. *NBC News*. Retrieved from <https://www.nbcnews.com/technology/soldiers-3-robots-military-bots-get-awards-nicknames-funerals-4B11215746>
- Tarantola, S. (2017, July 29). Who needs friends when robots are this sociable? *Engadget*. Retrieved from <https://www.engadget.com/2017/07/29/who-needs-friends-when-robots-are-this-sociable/>
- Vallerdú, J. (2018). *Robots sexuales. ¿Los límites de nuestra sexualidad..o de la de los robots?* Universitat Autònoma de Barcelona. Retrieved from [https://www.jgcarpenter.com/pdfs/Robots\\_sexuales.\\_Los\\_limites\\_de\\_nuestra.pdf](https://www.jgcarpenter.com/pdfs/Robots_sexuales._Los_limites_de_nuestra.pdf)
- War is Boring. (2018, March 15). What happens to us when robots fight our wars? Two hypotheses. <https://warisboring.com/what-happens-to-us-when-robots-fight-our-wars/>
- Young, N. (2013, September 27). Spark, with Nora Young, Episode 226: Falling in love with artificial intelligence. Context-aware computing and common ground. Soldiers and robots. The beauty of glitch art. [Radio broadcast]. *Canadian Broadcasting Company*. Retrieved from <http://www.cbc.ca/radio/spark>