

# Julie Carpenter

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## Education

### **Doctor of Philosophy, Educational Psychology, 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 behavioral 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 and human-centered approach used to find ways of understanding the complex ecosystems of 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 situations.

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

## Publications

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

### Books

Carpenter, J. (Expected, 2022). *The naked android: Synthetic socialness and the human gaze*. UK: CRC Press/Routledge. [Manuscript in preparation].

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

### Book Chapters

Carpenter, J. 2021. The solace of a robot and the valence of loneliness. *The Love Makers*. Ed. Aifric Campbell. UK: Goldsmiths Press.

Carpenter, J. [Chapter manuscript in preparation.] The ethics of emotional intimacy, synthetic love, and cheating on committed human-human relationships with a robot. *Gender in AI and robotics: Gender challenges from an interdisciplinary perspective*. Jordi Vallverdú, UAB. Expected 2021. Switzerland, Springer.

Carpenter, J. (2020). 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. In E. De Visser, R. Pak & E. Rovira [Eds.] *The psychology of interacting with everyday robots*. Amsterdam: Elsevier.

Carpenter, J. (2018). 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. Luppigini (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.

### 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.

### **Nonacademic 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).
- Carpenter, J. (2019, November-December). Why Project Q is more than the world's first nonbinary voice for technology. *ACM Interactions*, Vol. XXVI, p 56.

## **Research Experience**

### **Associate Research Scientist**

#### **Accenture, San Jose/San Francisco, CA, 2018-2020**

Human-robot interaction and human-emerging technology interaction applied research and development (e.g., human-robot teaming; autonomous vehicle interiors).

### **Research consultant**

#### **VICE/VIRTUE/Copenhagen Pride, Copenhagen, DK, 2018-2020**

Co-developed Q (1.0), the world's first gender-neutral voice for use with technology. Ongoing ethics, risk, and social concern assessment. Science communication at an international level. Engage policymakers, business, academia, as well as the broader public on gender, technology, ethics, and innovative thought leadership.

### **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.

**Web Content Developer, Marshfield Clinic, Marshfield, WI, 2001-2004**

Designed interfaces of Web sites/applications, including remote usability testing software. Established user-centered Web design methods. Responsible for all Marshfield Clinic Web-based application usability testing (from recruiting to data interpretation to final report write-up and presentation of results). Conducted heuristic evaluations, formal user testing, focus groups, and contextual inquiries. Created prototypes, mockups, and web pages for external and internal sites. Compiled reports, including statistical and market trends, to track Web ROI metrics. Researched and reported on competitive intelligence information.

**Communications/Web Specialist, Wisconsin Bankers Association, Madison, WI, 2000-2001**

Supervised production schedules for two corporate Web sites. Conceptualized and directed complete design process. Acted as Webmaster and Web editor. Developed Web site marketing plan, including establishing policy regarding use of corporate colors and logo on Web, Web advertising price structure, brochures, and other marketing materials.

**Communications/Web Administrator, Wisconsin Bankers Association, Madison, WI, 1999- 2000**

Developed information structure for the corporate Web site. Coordinated production of the site from design through launch. Edited and updated site content. Wrote Web copy, media talking points, press releases, and newspaper articles. Created an in-house solution to prioritize projects for the intranet and Internet. Evaluated the existing system and based on user research, developed a new organizational system and communication center that more efficiently accommodated new Clinic business initiatives and supported current ones.

## Teaching Experience

**Guest Lecturer, Tufts University, Medford, MA, April 23, 2017.** AI, Ethics, and Human-Robot Interactions.

**Visiting Lecturer, Robotics and Social Inclusion, Designskolen Kolding, Kolding, DK, January 18-22, 2016**

Taught 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.

## Awards and Nominations

- Project Q. (2019). As research consultant with VICE/VIRTUE-Copenhagen and Copenhagen Pride: Bronze Glass Lion for Change. Cannes: France.
- Lighthouse3. (2020). 100 Brilliant Women in AI Ethics to Follow in 2019 and Beyond.
- Lighthouse3. (2019). 100 Brilliant Women in AI Ethics to Follow in 2020 and Beyond.

## Invited Presentations

- Carpenter, J. (2021, May). *I/AI*. [keynote]. *Augmented Authorship – Digital Strategies for Artistic Collaboration*. Haus der Elektronischen Künste (HEK). Basel, Switzerland.
- Asmussen, E. & Carpenter, J. (2019, June). Jury co-presenter for Project Q. *Lions International Festival for Creativity*. Cannes: France.
- Carpenter, J. (2019, July). *Ethics and AI*. Johns Hopkins University Applied Physics Lab [panel]. Heather M. Roff, PhD.
- Carpenter, J. (November, 2019). *Flipping the script: Q and nonbinary voice*. "Why is AI a woman? ": Design for Different Futures. [Panel]. Philadelphia Museum of Art. Philadelphia, PA.
- Carpenter, J. (2018, August 21). UX Week. *Dark patterns and the ethics of robot design*. San Francisco, CA.
- Carpenter, J. (2016, November 4). The robot is the medium: Our ethical responsibilities as Makers. 6th Digital Ethics Symposium. Loyola University. *Chicago, IL*.
- Carpenter, J. (2016, March 3). Humans + Robots: Dream Machines. *TEDx*. Odense, Denmark.
- 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.
- Sherman, R. & Carpenter, J. (2019, June). Jury co-presenter for Project Q. *Lions International Festival for Creativity*. Cannes: France.

## Academic and Volunteer Service

- HumAIIn, Accenture**, Co-founder of education group to mitigate bias in AI research at Accenture Labs.
- Women in AI Ethics Council**, Roles + Rights Lead. 2019-Present.
- Q**, Vice/VIRTUE/Copenhagen PRIDE, (Copenhagen, DK), Research consultant, 2018-2020.
- The Science and Entertainment Exchange**, Consulting scientist, 2016-Present.
- Designskolen Kolding**, Kolding, DK. Mentor (Communication Design undergraduate senior project on emotional and ethical relationships between robots and humans), 2017-Present.
- Soldiers' Angels**, Las Vegas, Nevada. Volunteer, 2006-2012.
- Graduate & Professional Student Senate (GPSS)**, University of Washington, Seattle, WA, Senator/Graduate Student Representative (Human-Centered Design and Engineering), 2006-2007.
- UWTC Undergraduate Admissions Committee**, University of Washington, Seattle, WA, Graduate Student Representative. Voting member, 2005-2007.
- Association for Computing Machinery Special Interest Group - Computer-Human Interaction**, University of Washington, Seattle, WA, Officer (UW Chapter). Member, 2004-2006
- Forum on Science Ethics & Policy**, University of Washington, Seattle, WA. Member, 2006-2012.
- PatchWorx, Inc.**, SRI International, Menlo Park, CA. Digital chaperone, 2002-2004.

## 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*. <http://spectrum.ieee.org/autoton/robotics/military-robots/soldiers-can-get-emotionally-attached-to-robots-and-that-may-not-be-a-good-thing>
- Baraniuk, C. (2018, August 17). How to make a robot use Theory of Mind. *Scientific American*. <https://www.scientificamerican.com/article/how-to-make-a-robot-use-theory-of-mind/>
- Byers, M. (2014, October 27). Learning to live with robots. *Cosmos*. Toorak, AU. <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*. <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. <http://www.npr.org/templates/transcript/transcript.php?storyId=536043276>
- Daileda, C. (2013, September 18). Soldiers feel loss, anger, when their robots die. *Mashable*. [http://mashable.com/2013/09/18/robot-like-pets/#\\_8AvdCkfqSq2](http://mashable.com/2013/09/18/robot-like-pets/#_8AvdCkfqSq2)
- Dand, M. (2018, October 29). 100 brilliant women in AI ethics to follow in 2019 and beyond. <https://becominghuman.ai/100-brilliant-women-in-ai-ethics-to-follow-in-2019-and-beyond-92f467aa6232>
- Dreyfuss, E. (2018, December 27). The terrible joy of yelling at Alexa. *WIRED*. <https://www.wired.com/story/amazon-echo-alexa-yelling/>
- Estes, A.C. (2013, October 30). We aren't doing enough to prepare ourselves for robot love. *Gizmodo*. <http://gizmodo.com/we-arent-doing-enough-to-prepare-ourselves-for-robot-l-1455275396>
- Fung, B. (2013, November 11, updated). What'll happen to Veterans' Day when many of our warriors are drones? *The Washington Post*. <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*. <http://www.theatlantic.com/technology/archive/2013/09/funerals-for-fallen-robots/279861/>
- Gruber, A. (2017, November 1). Gefühle für Maschinen: Wenn die Roboter kommen, werden wir sie lieben. *Der Spiegel*. <http://www.spiegel.de/netzwelt/gadgets/anthropomorphismus-koennen-menschen-roboter-lieben-a-1128553.html>
- Hamada, Y. (2018, October 7). The highest peak of the 'uncanny valley'. *The Asahi Shimbun Globe*. Japan. <https://globe.asahi.com/article/11859860>
- Hsu, J. (2015, March 15). Robot funerals reflect our humanity. *Discover* (blogs). <http://blogs.discovermagazine.com/lovesick-cyborg/2015/03/15/robot-funerals-reflect-our-humanity/#.WVv5DMbMyt8>
- Kee, E. (2013, September 20). Some soldiers affected emotionally when their robots go "boom." *Ubergizmo*. <http://www.ubergizmo.com/2013/09/some-soldiers-affected-emotionally-when-their-robots-go-boom/>
- Koren, M. (2017, April 7). How to mourn a space robot? *The Atlantic*. New York: NY. <https://www.theatlantic.com/technology/archive/2017/04/cassini-robot-sad/522159/>
- Lin, P. (2016, February 1). Relationships with robots: Good or bad for humans? *Forbes*. <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.
- Mortada, D. (2018, March 21). Meet Q, the gender-neutral voice assistant. National Public Radio (NPR). <https://www.npr.org/2019/03/21/705395100/meet-q-the-gender-neutral-voice-assistant>

- Olsen, W. (2013, September 20). My robot friend? Researcher studies servicemembers' attachment to field robots. *Stars & Stripes*. <https://www.stripes.com/blogs/stripes-central/stripes-central-1.8040/>
- Palus, S. (2014, July 10). The military is funding the creation of adorable robots. *Smithsonian*. [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*. <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*. [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*. <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*. <https://www.echosciences-grenoble.fr/communautes/monstrueux/articles/les-dangers-de-l-empathie-artificielle>
- Rutin, A. (2015, October 6). Not like us: How should we treat the robots that we live alongside? *New Scientist*. <https://www.newscientist.com/article/dn28293-not-like-us-how-should-we-treat-the-robots-we-live-alongside/>
- Scalitar, J. (2019, 13 February). ¿Salvaría antes a un humano o a un robot?. *Razón*. Madrid, Spain. <https://www.larazon.es/sociedad/salvaria-antes-a-un-humano-o-a-un-robot-ML21917694>
- Silver, C. (2016, April 7). VR sex robots may be coming soon. *Forbes*. <https://www.forbes.com/sites/curtissilver/2016/04/07/vr-sex-robots-may-be-coming-soon/#62fc097c2152>
- Simon, M. (2019, March 11). The genderless digital voice the world needs right now. *WIRED*. San Francisco, CA. <https://www.wired.com/story/the-genderless-digital-voice-the-world-needs-right-now/>
- 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>
- Tarantola, S. (2017, July 29). Who needs friends when robots are this sociable? *Engadget*. <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.
- Wilson, M. (2019, March 21). The world's first genderless voice is here: Listen now. *FastCompany*. New York: NY. <https://www.fastcompany.com/90321378/the-worlds-first-genderless-ai-voice-is-here-listen-now>