

Jinghui Cheng

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Department of Computer Engineering
Polytechnique Montréal
Montréal, QC, Canada

Research Interests

Human-Computer Interaction, Software Engineering, Games User Research.

My research focuses on applying Human-Computer Interaction methods and techniques to **support professional practitioners who have domain-specific expertise but special information needs**, including designers, domain experts, and software engineers.

ACADEMIC POSITIONS

- 12/2017 – present **Assistant Professor**
Department of Computer Engineering, Polytechnique Montréal
- 09/2016 – 11/2017 **Research Associate**
Department of Computer Science and Engineering, University of Notre Dame

EDUCATION

- 03/2017 **DePaul University**, Chicago, IL
PhD in *Computer Science* – Human-Computer Interaction track
- *Dissertation*: Supporting therapy-centered game design for brain injury rehabilitation
- *Advisor*: Cynthia Putnam
- *Committee*: Katie Salen, Peter Hastings, Jinjuan Heidi Feng (Towson University)
- 06/2009 **Xi'an Jiaotong University**, Xi'an, China
MSE in *Computer Systems Engineering*
- 07/2006 BSE in *Information Engineering*

PUBLICATIONS

- Conference Papers ARYA, D., WANG, W., GUO, J. L. C., AND CHENG, J. Analysis and detection of information types of open source software issue discussions. In *Proceedings of the 41st International Conference on Software Engineering* (Piscataway, NJ, USA, 2019), ICSE '19, IEEE Press, pp. 454–464
- WANG, W., CHENG, J., AND GUO, J. L. Usability of virtual reality application through the lens of the user community: A case study. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (New York, NY, USA, 2019), CHI EA '19, ACM, pp. LBW0152:1–LBW0152:6
- CHENG, J., AND GUO, J. L. C. Activity-based analysis of open source software contributors: Roles and dynamics. In *Proceedings of the 12th International Workshop on Cooperative and Human Aspects of Software Engineering* (Piscataway, NJ, USA, 2019), CHASE '19, IEEE Press, pp. 11–18
- VIERHAUSER, M., BAYLEY, S., WYNGAARD, J., CHENG, J., XIONG, W., LUTZ, R., HUSEMAN, J., AND CLELAND-HUANG, J. Interlocking safety cases for unmanned autonomous systems in

urban environments. In *Proceedings of the 40th International Conference on Software Engineering: Companion Proceedings* (New York, NY, USA, 2018), ICSE '18, ACM, pp. 416–417

CHENG, J., GOODRUM, M., METOYER, R., AND CLELAND-HUANG, J. How do practitioners perceive assurance cases in safety-critical software systems? In *Proceedings of the 11th International Workshop on Cooperative and Human Aspects of Software Engineering* (New York, NY, USA, 2018), CHASE '18, ACM, pp. 57–60

CHENG, J., AND GUO, J. L. How do the open source communities address usability and ux issues?: An exploratory study. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems* (New York, NY, USA, 2018), CHI EA '18, ACM, pp. LBW523:1–LBW523:6

CHENG, J., ANDERSON, D., PUTNAM, C., AND GUO, J. Leveraging design patterns to support designer-therapist collaboration when ideating brain injury therapy games. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (New York, NY, USA, 2017), CHI PLAY '17, ACM, pp. 291–303

PUTNAM, C., LIN, A., SUBRAMANIAN, V., ANDERSON, D. C., CHRISTIAN, E., SWAMINATHAN, B., YALLA, S., COTTER, W., CICCONE, D., AND CHENG, J. Effects of Commercial Exergames on Motivation in Brian Injury Therapy. In *Extended Abstracts Publication of the 2017 Annual Symposium on Computer-Human Interaction in Play - CHI PLAY '17 Extended Abstracts* (2017), ACM Press, pp. 47–59

PUTNAM, C., ANDERSON, D. C., HOSLEY, W., CHENG, J., AND GOLDMAN, L. Cognitive Rehabilitation Potential of a Driving Simulation Game for BrainInjury. In *Extended Abstracts Publication of the 2017 Annual Symposium on Computer-Human Interaction in Play - CHI PLAY '17 Extended Abstracts* (2017), ACM Press, pp. 179–185

GOODRUM, M., CLELAND-HUANG, J., LUTZ, R., CHENG, J., AND METOYER, R. What Requirements Knowledge Do Developers Need to Manage Change in Safety-Critical Systems? In *2017 IEEE 25th International Requirements Engineering Conference (RE)* (sep 2017), IEEE, pp. 90–99

GUO, J., CHENG, J., AND CLELAND-HUANG, J. Semantically Enhanced Software Traceability Using Deep Learning Techniques. In *2017 IEEE/ACM 39th International Conference on Software Engineering (ICSE)* (may 2017), IEEE, pp. 3–14

CHENG, J., AND PUTNAM, C. Towards a Prototype Tool Leveraging Design Patterns to Support Design of Games for Brain Injury Therapy. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '17* (2017), ACM Press, pp. 1532–1538

CHENG, J., MULHOLLAND, J., AND SHANKAR, A. Using the Kano Model to Balance Delight and Frustration for an Enterprise Application. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '16* (2016), ACM Press, pp. 3021–3027

PUTNAM, C., CHENG, J., LIN, F., YALLA, S., AND WU, S. 'Choose a Game': Creation and Evaluation of a Prototype Tool to Support Therapists in Brain Injury Rehabilitation. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16* (2016), ACM Press, pp. 2038–2049

CHENG, J., PUTNAM, C., AND GUO, J. "Always a Tall Order": Values and Practices of Professional Game Designers of Serious Games for Health. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play - CHI PLAY '16* (2016), ACM Press, pp. 217–228

CHENG, J., AND PUTNAM, C. 'Choose a Game': A Prototype Tool to Support Therapists Use Games in Brain Injury Rehabilitation. In *Proceedings of the 2016 CHI Conference Extended*

Abstracts on Human Factors in Computing Systems - CHI EA '16 (2016), ACM Press, pp. 3659–3662

PUTNAM, C., DAHMAN, M., ROSE, E., CHENG, J., AND BRADFORD, G. Teaching Accessibility, Learning Empathy. In *Proceedings of the 17th International ACM SIGACCESS Conference on Computers & Accessibility* (2015), ACM Press, pp. 333–334

CHENG, J., PUTNAM, C., AND RUSCH, D. C. Towards Efficacy-Centered Game Design Patterns for Brain Injury Rehabilitation: A Data-Driven Approach. In *Proceedings of the 17th International ACM SIGACCESS Conference on Computers & Accessibility* (2015), ACM Press, pp. 291–299

CHENG, J., AND PUTNAM, C. Therapeutic Gaming in Context: Observing Game Use for Brain Injury Rehabilitation. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '15* (2015), ACM Press, pp. 1169–1174

PUTNAM, C., AND CHENG, J. Therapist-centered requirements: A multi-method approach of requirement gathering to support rehabilitation gaming. In *Proceedings of the IEEE 22nd International Requirements Engineering Conference (RE 2014)* (2014), IEEE, pp. 13–22

PUTNAM, C., AND CHENG, J. Motion-games in brain injury rehabilitation: an in-situ multi-method study of inpatient care. In *Proceedings of the 15th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '13)* (2013), ACM, ACM Press, pp. 1–2

PUTNAM, C., CHENG, J., RUSCH, D., BERTHIAUME, A., AND BURKE, R. Supporting therapists in motion-based gaming for brain injury rehabilitation. In *CHI '13 Extended Abstracts on Human Factors in Computing Systems (CHI EA '13)* (2013), ACM Press, pp. 391–396

PUTNAM, C., WOZNIAK, K., ZEFELDT, M. J., CHENG, J., CAPUTO, M., AND DUFFIELD, C. How do professionals who create computing technologies consider accessibility? In *Proceedings of the 14th international ACM SIGACCESS conference on Computers and accessibility (ASSETS '12)* (2012), ACM Press, pp. 87–94

Journal Articles VIERHAUSER, M., BAYLEY, S., WYNGAARD, J., XIONG, W., CHENG, J., HUSEMAN, J., LUTZ, R. R., AND CLELAND-HUANG, J. Interlocking safety cases for unmanned autonomous systems in shared airspaces. *IEEE Transactions on Software Engineering* (2019), 1–1

PUTNAM, C., DAHMAN, M., ROSE, E., CHENG, J., AND BRADFORD, G. Best Practices for Teaching Accessibility in University Classrooms: Cultivating Awareness, Understanding, and Appreciation for Diverse Users. *ACM Transactions on Accessible Computing* 8, 4 (2016), 1–26

PUTNAM, C., REINER, A., RYOU, E., CAPUTO, M., CHENG, J., ALLEN, M., AND SINGAMANENI, R. Human-Centered Design in Practice: Roles, Definitions, and Communication. *Journal of Technical Writing and Communication* 46, 4 (2016), 446–470

PUTNAM, C., CHENG, J., AND SEYMOUR, G. Therapist Perspectives: Wii Active Videogames Use in Inpatient Settings with People Who Have Had a Brain Injury. *Games for Health Journal* 3, 6 (2014), 366–370

ZHAI, Q., GUAN, X., CHENG, J., AND WU, H. Fast Identification of Inactive Security Constraints in SCUC Problems. *IEEE Transactions on Power Systems* 25, 4 (2010), 1946–1954

Book Chapters PUTNAM, C., ZAGAL, J., AND CHENG, J. You Are Not the Player: Teaching Games User Research to Undergraduate Students. In *Games User Research: A Case Study Approach*, M. A. Garcia-Ruiz, Ed. A K Peters/CRC Press, may 2016, ch. 2, pp. 33–53

Magazines and Other Publications KHOMH, F., ADAMS, B., CHENG, J., FOKAEFS, M., AND ANTONIOL, G. Software engineering for machine-learning applications: The road ahead. *IEEE Software* 35, 5 (2018), 81–84

CHENG, J. Supporting Therapy-Centered Game Design for Brain Injury Rehabilitation. In *College of Computing and Digital Media Dissertation* (2017), vol. 14

PUTNAM, C., AND CHENG, J. Helping therapists make evidence-based decisions about commercial motion gaming. *SIGACCESS Access. Comput.*, 107 (Sept. 2013), 3–10

AWARDS

- Paper Award Cheng et al. *Leveraging design patterns to support designer-therapist collaboration when ideating brain injury therapy games*. CHI PLAY '17 (Best Paper Award)
- Funded Grants - **NSERC Discovery Grant**. April, 2017. \$140,000 (RGPIN-2018-04470)
Collaborative Engineering of Usability Requirements
- **Program PIED of Polytechnique Montreal**. January 2017. \$60,000
Supporting software practitioners collaboratively address software usability issues

RESEARCH COMMUNITY ACTIVITIES

- Reviewer and Program Committee Member - International Journal of Human-Computer Studies (IJHCS) 2017–2019
- Intl. Conf. on Evaluation and Assessment in Software Engineering (EASE) 2019
- Symposium on SE for Adaptive and Self-Managing Systems (SEAMS) 2019
- ACM CHI Conference on Human Factors in Computing Systems (CHI) 2016–2019
(Special Recognition for Outstanding Review Received)
- ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) 2018
- ACM Conference on Designing Interactive Systems (DIS) 2017–2018
- Symposium on Computer-Human Interaction in Play (CHI PLAY) 2016–2018
(Special Recognition for Outstanding Review Received)
- ACM Conference on Interaction Design and Children (IDC) 2016–2017
- Other activities - Associate Editor of IEEE Software Blog

TEACHING

- Instructor at Polytechnique Montréal LOG6953A: Human-Centered Inquiry for Software and Computer Engineering (W2019)
- INF6900A/7900: Communication scientifique et technique (W2019, F2018)
- LOG2990: Projet de logiciel d'application Web (W2018)
- Instructor GAM312: Game Usability and Playtesting, DePaul University (Fall 2014)
- Guest Lecturer Exploring the relationship between culture and games.
- GAM312: Game Usability and Playtesting, DePaul University. (03/2014, 03/2013)
- Game design considerations for diverse users.
- HCI440: Introduction to User-Centered Design, DePaul University. (03/2013)
- Motion-based gaming for brain injury rehabilitation: research methodology.
- HCI445: Inquiry Methods and User Analysis, DePaul University. (10/2012)

INDUSTRY EXPERIENCE

- 06/2015 – 09/2015 **User Experience Research Intern**
- Platfora, San Mateo, CA
- Conducted benchmarking usability studies for two major product components

- Explored the use of Kano model as a means to prioritize usability issues
- Conducted an accessibility assessment of the product

02/2010 – 03/2011

Game Engine Engineer

3DiJoy Corporation, Shanghai, China

- Developed the network engine for motion-based games
- Developed the player communication dashboard for the gaming system.

09/2009 – 02/2010

Game Engine Engineer

Giant Interactive Group, Shanghai, China

- Developed the server-side game logic for a Massively Multiplayer Online Role-Playing Game (MMORPG)