Jinghui Cheng

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Department of Computer Engineering
Polytechnique Montréal
Montréal, QC, Canada

RESEARCH INTERESTS

My research combines the fields of Human-Computer Interaction and Software Engineering to **support professional practitioners who have domain-specific expertise but special information needs**.

ACADEMIC POSITIONS

12/2017 – present **Polytechnique Montréal**, QC, Canada
Assistant Professor, *Department of Computer Engineering*

09/2016 – 11/2017 **University of Notre Dame**, IN, USA
Research Associate, *Department of Computer Science and Engineering*

EDUCATION

DePaul University, Chicago, IL, USA
03/2017 PhD in *Computer Science* – Human-Computer Interaction

Xi'an Jiaotong University, Xi'an, China
06/2009 MSE in *Computer Systems Engineering*
07/2006 BSE in *Information Engineering*

PUBLICATIONS

Conference Papers LABRIE, A., AND CHENG, J. Adapting usability heuristics to the context of mobile augmented reality. In *Adjunct Publication of the 33rd Annual ACM Symposium on User Interface Software and Technology* (2020), UIST '20 Adjunct, ACM

SHARBATDAR, N., LAMINE, Y., MILORD, B., MORENCY, C., AND CHENG, J. Capturing the practices, challenges, and needs of transportation decision-makers. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (2020), CHI EA '20, ACM

WANG, W., ARYA, D., NOVIELLI, N., CHENG, J., AND GUO, J. L. Argulens: Anatomy of community opinions on usability issues using argumentation models. In *2020 CHI Conference on Human Factors in Computing Systems* (2020), CHI '20, ACM

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* (2019), ICSE '19, IEEE Press

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* (2019), CHI EA '19, ACM

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* (2019), CHASE '19, IEEE Press

Putnam, C., Rose, E., Bradford, G., and Cheng, J. Teaching Accessibility: Five Challenges. In *Global Perspectives on HCI Education. Symposium conducted at the 2019 annual conference on Human factors in computing system (CHI'19)* (2019)

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 Proceeedings* (2018), ICSE '18, ACM

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* (2018), CHASE '18, ACM

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* (2018), CHI EA '18, ACM

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* (2017), CHI PLAY '17, ACM

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 EA* (2017), ACM Press

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

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)* (2017), IEEE

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)* (2017), IEEE

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

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

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

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

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

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

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

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

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

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

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

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

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

Journal Articles   WANG, W., CHENG, J., AND GUO, J. L. C. How do open source software contributors perceive and address usability? valued factors, practices, and challenges. *IEEE Software* (2020)

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)

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

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* (2016)

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* (2016)

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* (2014)

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)

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, 2016, ch. 2

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

AWARDS

Best Paper Award	Cheng et al. *Leveraging design patterns to supportdesigner-therapist collaboration when ideating brain injury therapy games*. CHI PLAY '17

FUNDED GRANTS

Principal Investigator	**FRQ AUDACE**. May, 2020. $127,000. Co-Principal Applicant: Gabrielle Pagé *Reducing the risk of chronic pain and persistent unintentional use of opioids after surgery: When technology meets psychology*
	Mitacs Accelerate Project. March, 2020. $273,333. Co-Applicants: Bram Adams, Amal Zouaq *Towards a Fully Automated Bilingual Job Recommendation Platform*
	NSERC Discovery Grant. April, 2017. $140,000. *Collaborative engineering of usability requirements*
	Polytechnique Montreal PIED. January 2017. $60,000. *Supporting software practitioners collaboratively address software usability issues*
Collaborator	**NSERC CREATE**. September, 2020. $1,650,000. Principal Investigator: Clara Santato *Collaborative Research and Training Experience in Sustainable Electronics and EcoDesign*
	CFI John R. Evans Leaders Fund. April, 2020. $124,710. Principal Investigator: Marc-André Éthier *Create and experiment with educational devices adapting commercial history video games with a mobile laboratory and a fixed laboratory*

RESEARCH COMMUNITY ACTIVITIES

Journal Reviewer	- Journal of Systems and Software (JSS) 2019–2021 - International Journal of Human-Computer Studies (IJHCS) 2017–2020 - International Journal of Human-Computer Interaction (IJHCI) 2019–2020 - AIS Transactions on Human-Computer Interaction 2020
Conference Reviewer and Program Committee Member	- ACM CHI Conference on Human Factors in Computing Systems (CHI) 2016–2021 (*Special Recognition for Outstanding Review Received*) - ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) 2018–2021 - Symposium on Computer-Human Interaction in Play (CHI PLAY) 2016–2021 (*Special Recognition for Outstanding Review Received*) - ACM International Conference on Multimodal Interaction (ICMI) 2019-2021 - ACM Conference on Designing Interactive Systems (DIS) 2017–2020 - Intl. Conf. on Evaluation and Assessment in Software Engineering (EASE) 2019–2020 - Intl. Workshop on Artificial Intelligence and Requirements Engineering (AIRE) 2020 - IEEE Conference on Games (CoG) 2019 - Symposium on SE for Adaptive and Self-Managing Systems (SEAMS) 2019 - ACM Conference on Interaction Design and Children (IDC) 2016–2017

Conference organization	- Organizer: The Software Engineering for Machine Learning Applications International Symposium (SEMLA 2018, 2019, 2020) - Local Co-chair: 23rd International Conference on Multimodal Interaction (ICMI 2021) - Publicity Co-chair: 12th Symposium on Search-Based Software Engineering (SSBSE 2020)
Other activities	- Associate Editor of IEEE Software Blog

STUDENT SUPERVISION

Current PhD	Souleima Zghab, Arghavan Sanei, Isabella Ferreira, Maryam Abedi
Current MSc	Mitra Lashkari, Mohammad Amin Mozaffari
Graduated MSc	Yassin Lamine, Nasim Sharbatdar, Wenting Wang, Olivia Gelinas
Undergraduate	Audrey Labrie, Xinyuan Zhang, Tung-Ching Hsieh

TEACHING

Instructor at Polytechnique Montréal	Software Engineering Process (W2021, F2020, W2020) Human-Centered Inquiry for Software and Computer Engineering (F2020, W2020, W2019) Scientific and technical communication (W2019, F2018) Web application software project (W2018)
Instructor	Game Usability and Playtesting, DePaul University (Fall 2014)
Guest Lecturer	Exploring the relationship between culture and games. DePaul University. (03/2014, 03/2013)

INDUSTRY EXPERIENCE

06/2015 – 09/2015	**User Experience Research Intern.** *Platfora*, San Mateo, CA
02/2010 – 03/2011	**Game Engine Engineer.** *3DiJoy Corporation*, Shanghai, China
09/2009 – 02/2010	**Game Engine Engineer.** *Giant Interactive Group*, Shanghai, China