CRIWG
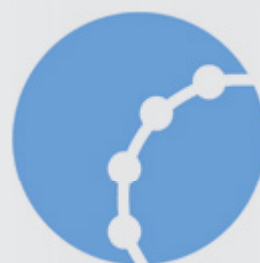
23TH INTERNATIONAL CONFERENCE ON COLLABORATION AND TECHNOLOGY

9TH INTERNATIONAL CONFERENCE ON COLLABORATION TECHNOLOGIES

August 8-11

ParkTown Hotel
Saskatoon, SK Canada
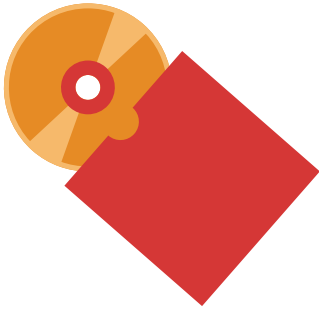
Message from the CRIWG chairs

We welcome you to the 23th International Conference on Collaboration and Technology (CRIWG 2017). The conference is supported and governed by the Collaborative Research International Working Group (CRIWG), an open community of collaboration technology researchers. Since 1995, conferences supported by CRIWG have focused on collaboration technology design, development, and evaluation. The background research is influenced by a number of disciplines, such as computer science, management science, information systems, engineering, psychology, cognitive sciences, and social sciences.

The papers published in the proceedings of this year's and past CRIWG conferences reflect the trends in collaborative computing research and its evolution. There has been a growing interest in collaborative learning, collaboration through social media, participation in online communities, and techniques and approaches for collaboration technology design. This year there was strong participation from Canada and Chile, each having five papers, and then Germany with three papers, Japan and Brazil with two papers each, and Norway and USA with one paper.

As editors, we would like to thank everybody who contributed to making this edition of CRIWG 2017 a success, as well as the Steering Committee, the members of the Program Committee, and the reviewers. Last but not least, we would like to acknowledge the effort of the local organizing committee in Saskatoon, without whom this conference would not have run so effectively. Special thanks go to our sponsors: The City of Saskatoon, Tourism Saskatoon, University of Saskatchewan, 7Shifts, ISM Canada, Coconut Calendar and to Springer, the publisher of the CRIWG proceedings, for their continuous support.

August 2017
Saskatoon, Canada

Carl Gutwin
Sergio Ochoa
Julita Vassileva
Tomoo Inoue

Message from the CollabTech chairs

CollabTech 2017, the Ninth International Conference on Collaboration Technologies, offers a unique forum for academics and practitioners to present and discuss innovative ideas, methods, or implementations related to collaboration technologies, which are greatly needed for various everyday collaboration activities due to recent advances in networking, computing and interaction technologies.

The previous CollabTech conferences were held in Tokyo in 2005, Tsukuba in 2006, Seoul in 2007, Wakayama in 2008, Sydney in 2009, Sapporo in 2012, Santiago in 2014, and Kanazawa in 2016. Following the success of joint organization with CRIWG 2014 and CRIWG 2016, CollabTech 2017 was co-located and organized with CRIWG 2017 again, but this time in Saskatoon, Canada. CRIWG and CollabTech communities have similar research topics and goals, but have been geographically located in different regions. We believe this joint endeavor would provide an interesting opportunity to meet each other.

The success of the conference was largely due to the program co-chairs, the conference committee members, and the reviewers whose efforts made the conference possible. The success was also due to University of Saskatchewan, the Information Processing Society of Japan (IPSJ), the SIG on Groupware and Network Services of IPSJ, the SIG on Cyberspace of the Virtual Reality Society of Japan, and the SIG on Communication Enhancement of the Human Interface Society for their generous support.

We hope that the conference is fruitful for all participants and plays an important role in cultivating the community in this research field.

August 2017
Saskatoon, Canada

Takaya Yuizono
Takashi Yoshino
Julita Vassileva

Committees

Co-chairs

Carl Gutwin
University of Saskatchewan

Sergio Ochoa
University of Chile

Takaya Yuizono
Japan Advanced Institute of Science and Technology, Japan

Julita Vassileva
University of Saskatchewan

Takashi Yoshino
Wakayama University, Japan

PC Members

Leila Alem, ThoughtWorks
Nelson Baloian, University of Chile
Marcos Borges, Federal University of Rio de Janeiro
Luis Carrico, University of Lisbon
Gert-Jan de Vreede, University of South Florida
Alicia Díaz, La Plata National University
Yanis Dimitriadis, University of Valladolid
Jesus Favela, CICESE
Mikhail Fominykh, Molde University College, Norway
Marco A. Gerosa, University of Sao Paulo
Luis A. Guerrero, University of Costa Rica
Francisco J. Gutierrez, University of Chile
Valeria Herskovic, Catholic University of Chile
Ramón Hervas, University of Castilla-La Mancha
Ulrich Hoppe, University of Duisburg-Essen
Tomoo Inoue, University of Tsukuba
Tun Lu, Fudan University
Stephan Lukosch, Delft University of Technology
Wolfram Luther, Universität Duisburg-Essen in Duisburg
Alberto Morán, University of Baja California
Hideyuki Nakanishi, Osaka University
Hugo Paredes, UTAD
José Pino, University of Chile
Elvira Popescu, University of Craiova
Liana Razmerita, Copenhagen Business School
Aurora Vizcaino, University of Castilla-La Mancha
Adriana Vivacqua, Federal University of Rio de Janeiro
Alejandro Zunino, UNICEN
Gustavo Zurita, University of Chile
Marcela Rodriguez, UABC
Alix Goguey, University of Saskatchewan

PC Members

Gustavo Zurita, Universidad de Chile, Chile
Junko Ichino, Kagawa University, Japan
Satoshi Ichimura, Otsuma Women's University, Japan
Kazuyuki Iso, NTT, Japan
Takashi Yoshino, Wakayama University, Japan
Hideaki Kuzuoka, University of Tsukuba, Japan
Ken-ichi Okada, Keio University, Japan
Jun Munemori, Wakayama University, Japan
Minoru Kobayashi, Meiji University, Japan
Hiroaki Ogata, Kyushu University, Japan
Tomoo Inoue, University of Tsukuba, Japan
Nelson Baloian, Universidad de Chile, Chile
Gwo-Dong Chen, National Central University, Taiwan
Hui-Chun Chu, Soochow University, Taiwan
Hironori Egi, University of Electro-Communications, Japan
Kinya Fujita, Tokyo University of Agriculture and Technology, Japan
Atsuo Hazeyama, Tokyo Gakugei Unversity, Japan
Gwo-Jen Hwang, National Taiwan University of Science and Technology, Taiwan
Satoshi Ichimura, Otsuma Women's University, Japan
Yutaka Ishii, Okayama Prefectural University, Japan
Marc Jansen, University of Applied Sciences Ruhr West, Germany
Jongwon Kim, Gwangju Institute of Science and Technology, Korea
Hyungseok Kim, Konkuk University, Korea
Wim Lamotte, Hasselt University, Belgium
Wolfram Luther, University of Duisburg-Essen, Germany
Hideyuki Nakanishi, Osaka University, Japan
Mamoun Nawahdah, Birzeit University, Palestine
Masayuki Okamoto, Toshiba, Japan
Nobuchika Sakata, Osaka University, Japan
Yoshiaki Seki, Tokyo City University, Japan
Hidekazu Shiozawa, Tamagawa University, Japan
Masahiro Takatsuka, The University of Sydney, Australia

Keynote Speakers

Loren Terveen is a Distinguished McKnight University Professor of Computer Science at the University of Minnesota. Before joining the University of Minnesota, he received his PhD in Computer Sciences from the University of Texas at Austin, and then spent 11 years at AT&T Labs / Bell Labs. Terveen is an expert in the areas of human-computer interaction and social computing. He has published over 100 scientific papers, holds 9 patents, has advised several startup companies, consulted on intellectual property cases, and has held many leadership positions in his profession, including serving as President of ACM's Special Interest Group on Computer-Human Interaction and on the CM Council.

Terveen's current areas of research emphasis are: peer production systems, incentive mechanisms to enhance user participation, the quantitative analysis of social media data, and geographically-based online communities. He leads projects that have: revealed new information about how valuable content is created on Wikipedia, produced and deployed new interface designs to enhance participation in online communities, developed a new location-based messaging system, combined wiki and geographical information systems technologies to create novel interfaces that let people enter and access information about places in their local communities, and created the first fully functional geographical wiki. In all his work, he seeks to use knowledge gained from empirical studies to build novel systems that solve real problems.

Regan Mandryk is a professor in Computer Science at the University of Saskatchewan; she pioneered the area of physiological evaluation for computer games in her Ph.D. research at Simon Fraser University with support from Electronic Arts. With over 150 publications that have been cited over 5600 times, she continues to investigate novel ways of understanding player experience in partnership with multiple industrial and international collaborators, but also develops and evaluates persuasive games, games for health, games for special populations including children with neurodevelopmental disorders, games that foster interpersonal relationships, and ubiquitous games that merge the real world with the game world. Regan has been the invited keynote speaker at several international game conferences, led Games research in the Canadian GRAND Network, organizes several international game conferences, and leads the first Canadian graduate training program on games user research (SWaGUR.ca).

Wednesday August09

CRIWG

8:30	Continental Breakfast	
9:00-10:00	Keynote: Loren Terveen, University of Minnesota, USA	
10:00-10:30	Coffee Break	

	S1-A Collaborative Learning 1 Chair: Ulrich Hoppe Cedar Room	**S1-B Collaborative Applications 1** Chair: Carl Gutwin Oak Room
10:30	**Sequence Patterns in Small Group Work within a Large Online Course** D. Doberstein 👤 , T. Hecking and H. U. Hoppe ◐	**Anonymity-preserving Methods for Client-side Filtering in Position-based Collaboration Approaches** G. Bumiller 👤 , H. Detjen, S. Geisler, S. Hoffmann, M. Jansen and M. Markard ◑
11:00	**Group matching for peer mentorship in small groups** O. Adewoyin 👤 and J.Vassileva ◑	**Introducing Gamification to Cleaning and Housekeeping Work** S. Ichimura 👤 ◑
11:30	**A Scratch-based Collaborative Learning System with a Shared Stage Screen** Y. Fukuma 👤, K. Tsutsui, H. Takada and I. Piumarta ◑	**Mediating Intergenerational Family Communication with Computer-Supported Domestic Technology** F. J. Gutierrez 👤 , S. F. Ochoa and J. Vassileva ◑
12:00-13:30	Lunch (90 min)	

	S1-A Collaborative Learning 2 Chair: Sergio Ochoa	**S2-B Cultural Collaboration** Chair: Junko Itou
13:30	**Practice of Skills for Reading Comprehension in Large Classrooms by using a Mobile Collaborative Support and Microblogging** G. Zurita 👤 , O. Jerez, N. Baloian and S. Peñafiel ◑	**Enhancing Participation Balance in Intercultural Collaboration** M. Pituxcoosuvarn and T. Ishida Mondeheera 👤 ◑
14:00	**Speakers keyword generation: Speakers empowerment for multilingual interaction via keywords** H. Hanawa 👤, X. Song, M. Tang and T. Inoue ◑	**Susceptibility of Users to Social Influence Strategies and the Influence of Culture in a Q&A Collaborative Learning Environment** I. Adaji 👤 and J. Vassileva ◑

Wednesday August09

	CollabTech Paper		CRIWG Paper		TECL Workshop	Presenter	15-minute presentation	30-minute presentation

14:30	**U-Learning: An Collaborative Experience in the Urban Context** J. Brito👤, B. Monteiro, A. Gomes, R. Amorim, L. Seixas and I. Filho 🕐	**Enhancing Learners' Cross-cultural Understanding in Language and Culture Class Using InCircle** N. Uosaki👤 , T. Yonekawa and C. Yin 🕐
14:45	**AccelChalk: Detecting Writing Action with Chalk Acceleration toward Collaboration between Teacher and Students** T. Okazawa👤 and H. Egi 🕐	

15:00-15:30	Coffee Break

	S3-A Specific Application Domains Chair: Takashi Yoshino	**S3-B Online Communities** Chair: Noriko Uosaki
15:30	**Extension of Smartphone by Wearable Input/output Interface with Floor Projection** N. Sakata 👤 , F. Sato, T. Tominaga and Y. Hijikata 🌓	**Support of Foreign Tourists with Culturally Situated Associations** V. Khalil👤, M. Otani, D. Lin and T. Ishida 🌓
16:00	**Exploring Collaboration in the Realm of Virtual Museums** N. Baloian👤 , W. Luther, D. Biella, J.A. Pino, T. Schreck, N. Hitschfeld and N. Karapetyan 🌓	**Sharing Composite Web Applications with Multiple Coupling Levels** G. Blichmann👤, Ch. Lienemann and K. Meißner 🌓
16:30	**Analysis of Multidisciplinary Collaboration in Primary Healthcare: the Chilean case** C. Saint-Pierre👤 , V.Herskovic and M.Sepúlveda 🕐	**Factors affecting the willingness to share knowledge in the communities of practice** V. Agrawal👤 and E. Snekkenes 🕐

16:45-17:15	Free Time (30 min)
17:15	Bus leaves for Berry Barn
17:45-20:30	Conference dinner at Berry Barn
20:45	Bus leaves to Saskatoon

Thursday August 10

Time		S4-A Collaborative Applications 2 Chair: Takaya Yuizono	S4-B Design of Collaboration Support 1 Chair: Francisco Gutierrez
8:30	Continental Breakfast		
9:00-10:00	Keynote: Regan Mandryk, University of Saskatchewan, Canada		
10:00-10:30	Coffee Break (30 min)		
10:30		An Approach using Design Science Research for the development of a Collaborative Assistive System C. Berkenbrock 👤, D. Silva, G.R. Berkenbrock and R. Rizzatti 🕐	Worth the Wait?: The Effect of Responsiveness on Interpersonal Attraction Among Known Acquaintances M. Heston👤 and J. Birnholtz 🕐
11:00		Engineering Web Applications Using Real-Time Collaborative Modeling P. de Lange 👤, P. Nicolaescu, R. Klamma and M. Jarke 🕐	Spatial Continuity and Robot-Embodied Pointing Behaviour in Videoconferencing Y. Onishi👤, K. Tanaka, and H. Nakanishi 🕐
11:30		Availability of Disaster Preparedness Awareness Improvement for Supplying Knowledge using Microblog and Comic Expression S. Enokida👤, T. Fukushima, T. Yoshino, T. Motozuka and N. Egusa 🕐	What Do Remote Music Performances Lack? H. Tarumi👤, T. Nakai, K. Miyazaki, D. Yamashita and Y. Takasaki 🕐
11:45			Tag chat: reminding support sys. of past topics using tag J. Itou 👤, R. Tanaka and J. Munemori 🕐
12:00-13:30	Lunch (90 min)		
13:30-15:00		S5-A Specific Application Domains 2 Chair: Tomoo Inoue	S5-B TECL Workshop Chair: Minoku Kobayashi
13:30		Making Interface Customizations Work: Lessons From a Successful Tailoring Community C. Gutwin 👤 🕐	A Visual and Interactive Recommender System for Scientific Papers J. Magalhães👤, E. Costa, J. Fechine, and J. Vassileva 🕐

Thursday August 10

Legend: CollabTech Paper · CRIWG Paper · TECL Workshop · Presenter · 15-minute presentation · 30-minute presentation

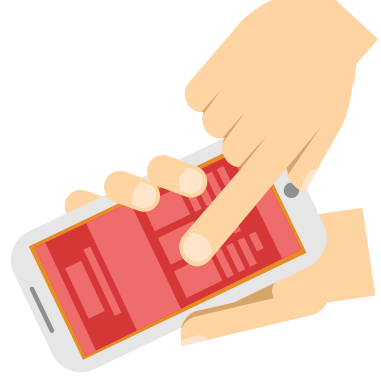| Time		
14:00	**Case studies of Industry-Academia Research Collaborations for Software Development with Agile** I. Guillot, G. Paulmani, V. Kumar and Sh. Fraser	**A mathematical representation for collaborative construction of SL blocks** Shen-Guan Shih, Yi-Feng Chang
14:30	**A Method for Estimating Worker States Using a Combination of Ambient Sensors for Remote Collaboration** K. Iso, M. Kobayashi and T. Yuizono	**The additive effect of collaborative and game-based learning in using an eBook for promoting spatial ability** Hi-Lian Jeng, Yung-Shun Lin
14:45	**Tourist Information Extraction Method from Tweets without Tourist Spot Names for Tourist Information Visualization System** S. Watanabe and T.Yoshino	
15:00-15:30	Coffee Break (30 min)	
	S6-A Collaborative Applications 3 Chair: Daniel Biella	**S6-B Design of Collaboration Support 2** Chair: Carla Berkenbrock
15:30	**BLE-Based Children's Social Behavior Analysis System for Crime Prevention** Sh. Nakamae, Sh. Kataoka, C. Tang, S. Vasilache, S. Saga, B. Shizuki and Shin Takahashi	**Susceptibility of Graduate Assistants to Social Influence Persuasive Strategies** H. Haida-Selassie and J. Vassileva
16:00	**A Triage Training System Considering Cooperation and Proficiency of Multiple Trainees** K. Izumida, R. Kato and H. Shigeno	**Technological Feasibility of a Smartphone-based System to Integrate Volunteers into Professional Rescue Processes** G.Bumiller, H. Detjen, S. Geisler, S. Hoffmann, M. Jansen and M. Markard
16:30-17:00	Closing	

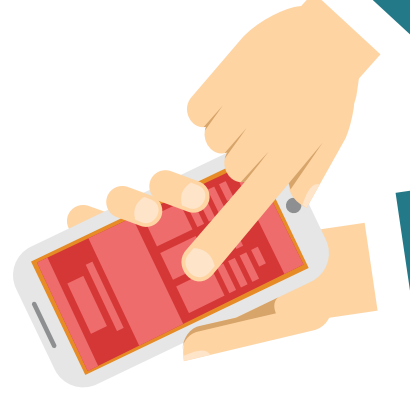# Thank you to our sponsors

UNIVERSITY OF SASKATCHEWAN

TourismSaskatoon

City of Saskatoon

7SHIFTS

Thank you to our sponsors

IPSJ Information Processing Society of Japan

Springer

ISM CANADA — AN IBM COMPANY

coconut CALENDAR

Schedule and social events

Day 1: August 8 (Tuesday)

17:00-20:00	South Ballroom	Registration and Welcome reception

Day 2: August 9 (Wednesday)

Time	Cedar Room	Oak Room
8:30	Continental Breakfast	
9:00-10:00	Keynote: Loren Terveen, University of Minnesota, Cedar Room	
10:00-10:30	Coffee Break (30 min)	
10:30-12:00	Session 1A Collaborative Learning 1	Session 1B Collaborative Applications 1
12:00-13:30	Lunch (90 min)	
13:30-15:00	Session 2A Collaborative Learning 2	Session 2B Cultural Collaboration
15:00-15:30	Coffee Break (30 min)	
15:30-16:45	Session 3A Specific Application Domains 1	Session 3B Online Communities
16:45-17:15	Free Time (30 min)	
17:15	Bus leaves to Berry Barn, Riverside @ Parktown Hotel	
17:30-20:30	Conference Dinner BBQ, Berry Barn	
20:45	Bus leaves to Saskatoon	

Day 3: August 10 (Thursday)

Time	Cedar Room	Oak Room
8:30	Continental Breakfast	
9:00-10:00	Keynote: Regan Mandryk, University of Saskatchewan, Cedar Room	
10:00-10:30	Coffee Break (30 min)	
10:30-12:00	Session 4A Collaborative Applications 2	Session 4B Design of Collaboration Support 1
12:00-13:30	Lunch (90 min)	
13:30-15:00	Session 5A Specific Application Domains 2	Session 5B TECL Workshop papers
15:00-15:30	Coffee Break (30 min)	
15:30-16:30	Session 6A Collaborative Applications 3	Session 6B Design of Collaboration Support 2
16:30-17:00	Closing (30 min)	
17:00 onwards	Free Time	

Day 4: August 11 (Friday)

Time	Event
8:30	Breakfast on your own
9:30	Bus leaves for social excursion, Riverside @ Parktown Hotel
10:00-15:30	Wanuskewin Heritage Park
	Guided walk, dream-catcher making, lunch, free time or tipi building, dance, museum
15:30	Bus leaves to Western Development Museum
16:00-19:00	Western Development Museum. Free walk in the museum village, late lunch/snacks
19:00	Bus leaves to Park Town Hotel