Yoichi MATSUYAMA, Ph.D CURRICULUM VITAE

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Yoichi Matsuyama is Associate Research Professor at the Perceptual Computing Laboratory, Waseda University in Tokyo. Prior to the current position, he was a Post Doctoral Fellow (Special Faculty) at the ArticuLab in the School of Computer Science, Carnegie Mellon University until November 2018. He has been designing and developing a number of conversational AI media systems for more than a decade. His research interest lies in computational models of human conversations, which combine artificial intelligence, social science, and human-computer/robot interaction. In CMU, he was leading SARA (Socially Aware Robot Assistant) project that was exhibited in a number of high profile conferences, including the World Economic Forum Annual Meeting 2017, Davos, Switzerland. SARA was featured in numerous major media, such as MIT Technology Review, Washington Post, CNBC, BBC, CNET, Popular Science and Science Friday. His Ph.D dissertation project was SCHEMA, a multiparty conversation facilitation robot, specifically its computational models of facilitation strategies and language generation, as well as its robotic platform development. He was also a visiting scholar in the iCub Facility (an embodied cognitive robotics research group), Italian Institute of Technology, and a committee member of ACM SIGGRAPH Asia. He received B.A. in cognitive psychology and media studies, M.E. and Ph.D in computer science from Waseda University in 2005, 2008 and 2015 respectively.

Research Interests

Mission: **Designing Socially Expressive Conversational AI Media to Assist and Entertain Human Lives.**

Interests: Embodied Conversational Agents; Dialogue Systems; Natural Language Processing; Machine Learning; Sociolinguistics; Cognitive Psychology; Human-Robot Interaction; Industrial / Product Design

Experiences

Associate Research Professor, 2018 December - present
Perceptual Computing Laboratory, Green Computing Systems Research Organization, Waseda University, Tokyo, Japan

Postdoctoral Research Fellow (Special Faculty), 2014 - 2018 November
ArticuLab, Language Technologies Institute and Human-Computer Interaction Institute, Carnegie Mellon University, Pittsburgh, United States (Advisor: Justine Cassell)

Visiting Research Fellow, 2013
iCub Facility, Italian Institute of Technology, Genova, Italy (Advisor: Giorgio Metta)

Founder & Director, 2012 - 2014
WIZDOM (Waseda Integrated Space of Wizards, Digital Oriented Manufacturers), Waseda University, Tokyo, Japan

Research Associate, 2010 - 2013
Department of Computer Science, Waseda University, Tokyo, Japan

Virtual Reality Designer, 2004 - 2005
CAD CENTER Inc., Tokyo, Japan

Education

Ph.D, Computer Science, 2015 (Advisor: Tetsunori Kobayashi, Perceptual Computing Group)
M.E., Computer Science, 2008 (Advisor: Tetsunori Kobayashi, Perceptual Computing Group)
B.A., Human and Social Sciences, 2005 (Advisor: Machiko Kusahara, Media Studies)
(* All degrees from Waseda University, Tokyo, Japan)

Research Projects

SARA: Socially Aware Robot Assistant (2016 - 2018)

Role: Project Lead (Postdoc), Carnegie Mellon University

SARA (Socially-Aware Robot Assistant) is an embodied intelligent personal assistant that analyses the user's visual (head and face movement), vocal (acoustic features) and verbal (conversational strategies) behaviours to estimate its rapport level with the user, and uses its own appropriate visual, vocal, and verbal behaviors to achieve task and social goals. SARA aided attendees of the World Economic Forum Annual Meetings by eliciting their preferences through building rapport, and then making informed personalized recommendations about sessions to attend and people to meet. SARA is a flagship project that is a foundational platform for all the socially-aware conversational AI systems in the lab, which resulted in multiple papers, patents, and more than 100 GitHub repositories. From the beginning, I acted as a project lead managing all aspects of the project, including goal setting, scheduling of the team members and deliverables, architecture design, software implementation, model training, and field studies. The description of the SARA platform including its design case studies in multiple domains and devices is expected to be published as a journal paper in the coming year.

- **Project page**: http://articulab.hcii.cs.cmu.edu/projects/sara/
- **Related Publications**
  - Yoichi Matsuyama, Arjun Bhardwaj, Ran Zhao, Oscar Romero, Sushma Akoju, and Justine Cassell, Socially-Aware Animated Intelligent Personal Assistant Agent, In Proceedings of the 17th Annual Meeting of the Special Interest Group on Discourse and Dialogue, pp. 224-227, August 2016.
  - Florian Pecune, Jingya Chen, Yoichi Matsuyama and Justine Cassell, Field Study Analysis of a Socially Aware Robot Assistant, Proceedings of the special track Socially Interactive Agents (SIA) at the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), July 2018.
  - Alankar Jain, Florian Pecune, Yoichi Matsuyama and Justine Cassell, A Social User Simulator Architecture for Socially-Aware Conversational Agents, 18th ACM International Conference on Intelligent Virtual Agents (IVA 2018).
- **Demos/Exhibitions**
  - World Economic Forum Annual Meeting, Davos, Switzerland, January 2017
    - Video: https://www.youtube.com/watch?v=f6sx2fUoQNg
    - News release: http://articulab.hcii.cs.cmu.edu/news/articulab-in-the-world-economic-forum-annual-meeting-2017/
  - World Economic Forum Annual Meeting of New Champions, Tianjin, China. June 2016
    - Video: https://www.youtube.com/watch?v=cdGxk2RV_os
    - News release: http://articulab.hcii.cs.cmu.edu/news/sara-at-the-world-economic-forum-annual-meeting-of-new-champions/
  - White House Frontiers Conference, October 2016
  - SIGDIAL Demo Session, September 2016

InMind: Yahoo!-CMU Personal Assistant (2014 - 2018)

Role: Project Lead/Co-Lead (Postdoc), Carnegie Mellon University

As a part of the agreement between Yahoo! and CMU, called InMind project, our work focused on creating an autonomous virtual personal assistant that will build long lasting relationships with people through managing rapport between them and itself. The biggest challenge of this project was to develop personal assistants at "real scale". The InMind project consisted of sub-projects of intelligent modules, and our team coordinated the collaborations with other faculty members to integrate their work, such as recommendation system, task-oriented dialogue management into our socially-aware agent system. I closely worked with the InMind central management team to design a whole software platform, namely, the Multi-User Framework, and deployed a number of versions of personal assistant applications based on the SARA architecture.

- **Project page**: http://articulab.hcii.cs.cmu.edu/projects/yahoo/
- **Demos/Exhibitions**
  - Bots and AI Conference (LivePerson and Carnegie Mellon University), May 2017
  - The first version of of the rapport-building news recommendation personal assistant agent running, May 2015
  - The second version of the rapport-building news recommendation personal assistant agent, July 2015
    - Video: https://www.youtube.com/watch?v=HlgsG564XNw
  - The third version connected to the Never Ending Language Learner (NELL) as its common sense, December 2015
    - Video: https://www.youtube.com/watch?v=AJuc7tqRAF0

RAPT: Rapport-Aligning Peer Tutor (2014 - 2018)

Role: Project Co-Lead (Visiting Scholar / Postdoc), Carnegie Mellon University

The RAPT project has two fronts: developing a theory of how rapport is built, maintained, and destroyed among teens, and developing a computational architecture and system implementation that allows a virtual peer to build, maintain (and if necessary respond to destroying) rapport in the context of math tutoring. Based on the rapport management theory grounded on socio-linguistic theories and actual peer tutoring data analysis, I have involved in data collection, annotation, and evaluation of computational models of rapport-building, and led the development of the study system as a project co-lead.

- **Project page:** http://articulab.hcii.cs.cmu.edu/projects/rapt/
- **Related Publications**
  - Pranav Goel, Yoichi Matsuyama, Michael Madaio and Justine Cassell, "I think it might help if we multiply", and not add: Detecting Indirectness in Conversation, International Workshop on Spoken Dialog System Technology (IWSDS 2018), May 2018.
  - Zian Zhao, Michael Madaio, Florian Pecune, Yoichi Matsuyama and Justine Cassell, Socially-Conditioned Task Reasoning for a Virtual Tutoring Agent, Proceedings of the special track Socially Interactive Socially-Conditioned Task Reasoning for a Virtual Tutoring Agent Agents (SIA) at the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), July 2018.
- **Demos/Exhibitions**
  - Multi-agent simulation for the rapport-aligning peer tutor (International Conference on Virtual Agents (IVA) 2014 Demo Session), August 2014
    - Video: https://www.youtube.com/watch?v=GIR4Uw4-AJk
  - Google Cloud Next ’18: RAPT demo as a use case of Google Cloud Platform

SCHEMA: Multiparty Conversation Facilitation Robot (2009-2014)

Role: Project Lead (Ph.D), Waseda University

SCHEMA [ʃe:ma] is a platform for conversational robots facilitating multiparty conversations, which can maintain a group as a group, support group task achievements, and furthermore, entertain a group conversation itself. The conversational process mainly consists of procedural behavior selection regulating socially imbalanced situation and language generation for enjoyable conversations. The facilitation robot plays a unique role observing situations and taking initiatives to regulate equality of engagement density among participants. The procedural behavior production policy is optimized as a partially observable Markov decision process. The results of user studies conducted to evaluate the proposed procedures showed evidences of their acceptability of robot's behaviors and feeling of groupness perceived by participants. In the language generation process, we proposed an automatic expressive opinion sentence generation mechanisms for enjoyable conversations. Expressed opinions are extracted from a large number of reviews on the web, and ranked in terms of contextual relevance, length of sentences, and amount of information represented by the frequency of adjectives. The sentence generator also has an additional phrasing skill. The results of user studies implied that mechanisms effectively promote interlocutors' enjoyment and interests. I also designed the robotic hardware including its mechanics and exterior to fulfill design requirements, and conducted in-lab and field studies to evaluate conversational functions and effects. The results were published in a number of papers, including two journal papers. All the design and evaluation processes are described in the Ph.D dissertation.

- **Project pages:**
  - http://www.pcl.cs.waseda.ac.jp/projects/robots/schema/
  - http://www.yoichimatsuyama.com/schema-design/
- **Publications**
  - Yoichi Matsuyama, Iwao Akiba, Shinya Fujie and Tetsunori Kobayashi, Four-Participant Group Conversation: A Facilitation Robot Controlling Engagement Density As the Fourth Participant, Journal of Computer Speech and Language, 2014. (DOI:10.1016/j.csl.2014.12.001).
  - Yoichi Matsuyama, Akihiro Saito, Shinya Fujie and Tetsunori Kobayashi, Automatic Expressive Opinion Sentence Generation for Enjoyable Conversational Systems, IEEE/ACM Transactions on Audio, Speech, and Language Processing, 2014. (DOI:10.1109/TASLP.2014.2363589).
  - Yoichi Matsuyama, Kosuke Hosoya, Hikaru Taniyama, Hiroki Tsuboi, Shinya Fujie, Tetsunori Kobayashi, SCHEMA: Multi-party Interaction-Oriented Humanoid Robot, ACM SIGGRAPH ASIA 2009 Art Gallery & Emerging Technologies: Adaptation, pp. 82-82, December 2009.
  - Yoichi Matsuyama, Multiparty Conversation Facilitation Robots, Waseda University, February 2015. (Ph.D dissertation)

- **Demos/Exhibitions**
  - A Facilitation Robot in Multiparty Conversational Situations (Journal of Computer Speech and Language)
    - Video: https://www.youtube.com/watch?v=oanbOmNida0
  - Automatic Expressive Opinion Generation (IEEE/ACM Transactions on Audio, Speech, and Language Processing)
    - Video: https://www.youtube.com/watch?v=rYGLg3OUP_k
  - SIGGRAPH ASIA 2009 Art Gallery & Emerging Technologies
    - Video: https://www.youtube.com/watch?v=Cex7kbiriGk&t=1s

NANDOKU: Conversation Robots for Elderly Care Application (2007 - 2010)

Role: Project Co-Lead (Master - Ph.D), Waseda University

We proposed a robot that promotes an enjoyable party game as a facilitation robot system. In this task, a robot participates in a quiz game as one of participants and tries to promote the other participants' enjoyment of the game. The functions implemented in the robot are: (1) The robot participates in the group's communication using its basic group conversation functions; (2) The robot performs the game according to the rules of the game; (3) The robot facilitates communication using its proper actions depending on the game's and participants' situations. We conducted a real field experiment in which a prototype system participates in a quiz game with elderly people in an elderly day-care center. The robot successfully entertained the people with one-hour demonstration. We also evaluated its interactions with subjects in the NANDOKU quiz game using video analysis and a semantic differential (SD) method that utilizes questionnaires. The results of the SD method indicate that the subjects were more pleased and felt the game was noisier when the robot participated. The results of the video analysis indicate that the smiling duration ratio is greater with the robot's participation. These results showed the robot's communication activation function in the party game.

- **Related Publications**
  - Shinya Fujie, Yoichi Matsuyama, Hikaru Taniyama, and Tetsunori Kobayashi, Conversation Robot Participating in and Promoting Human-Human Communication, The Transactions of The Institute of Electronics, Information and Communication Engineering (IEICE) A, Vol.J95-A No.1, pp37-45, 2012.
  - Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, Framework of Communication Activation Robot Participating in Multiparty Conversation, AAAI 2010 Fall Symposia Dialog with Robots, pp.68-73, November 2010.
  - Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, Psychological Evaluation of A Group Communication Activation Robot in A Party Game, Proceedings of Interspeech 2010, pp.3046-3049, September 2010.
  - Yoichi Matsuyama, Hikaru Taniyama, Shinya Fujie, Tetsunori Kobayashi, System Design of Group Communication Activator: An Entertainment Task for Elderly Care, ACM/IEEE Human-Robot Interaction 2009, San Diego, pp.243-244, March 2009.
  - Yoichi Matsuyama, Hikaru Taniyama, Shinya Fujie, and Tetsunori Kobayashi, Designing Communication Activation System in Group Communication, Proceedings of Humanoids 2008, pp.629-634, December 2008.
- **Demos/Exhibitions**
  - A Conversational Robot Participating in A Party Game (AAAI 2010, HRI 2009, Humanoids 2008)
    - Video: https://www.youtube.com/watch?v=zYBWhwOu2dI&t=11s

Publications

Dissertation

- Yoichi Matsuyama, **Multiparty Conversation Facilitation Robots**, Waseda University, February 2015.

Journal Papers

- Stephenson Beck, Annika Meinecke, Chi-Chun Lee, and Yoichi Matsuyama, **Initiating and Maintaining Collaborations and Facilitating Understanding in Interdisciplinary Group Research**, Small Group Research, 2017, 48(5), pp.532-543.
- Yoichi Matsuyama, Iwao Akiba, Shinya Fujie and Tetsunori Kobayashi, **Four-Participant Group Conversation: A Facilitation Robot Controlling Engagement Density As the Fourth Participant**, Journal of Computer Speech and Language, 2015. (DOI:10.1016/j.csl.2014.12.001)
- Yoichi Matsuyama, Akihiro Saito, Shinya Fujie and Tetsunori Kobayashi, **Automatic Expressive Opinion Sentence Generation for Enjoyable Conversational Systems**, IEEE/ACM Transactions on Audio, Speech, and Language Processing, 2015. (DOI:10.1109/TASLP.2014.2363589)

- Yoichi Matsuyama, Jun Nakagawa, Taiki Watai, Akihiro Hayashi, Atsushi Enta and Yasutaka Wada, **Designing Human Behaviors: Human-Environment Interaction Design Implicitly Triggering Behavior Changes**, IPSJ Magazine Vol.55, No.9, pp.952-954, Information Processing Society of Japan, September 2014.
- Shinya Fujie, Yoichi Matsuyama, Hikaru Taniyama, and Tetsunori Kobayashi, **Conversation Robot Participating in and Promoting Human-Human Communication**, The Transactions of The Institute of Electronics, Information and Communication Engineering (IEICE) A, Vol.J95-A No.1, pp37-45, 2012.

Peer Reviewed Conference Papers

- Alankar Jain, Florian Pecune, Yoichi Matsuyama and Justine Cassell, **A Social User Simulator Architecture for Socially-Aware Conversational Agents**, 18th ACM International Conference on Intelligent Virtual Agents (IVA 2018), November 2018.
- Pranav Goel, Yoichi Matsuyama, Michael Madaio and Justine Cassell, **"I think it might help if we multiply, and not add": Detecting Indirectness in Conversation**, International Workshop on Spoken Dialog System Technology (IWSDS 2018), May 2018.
- Florian Pecune, Jingya Chen, Yoichi Matsuyama and Justine Cassell, **Field Study Analysis of a Socially Aware Robot Assistant**, Proceedings of the special track Socially Interactive Agents (SIA) at the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), July 2018.
- Zian Zhao, Michael Madaio, Florian Pecune, Yoichi Matsuyama and Justine Cassell, **Socially-Conditioned Task Reasoning for a Virtual Tutoring Agent**, Proceedings of the special track Socially Interactive Agents (SIA) at the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), July 2018.
- Yoichi Matsuyama, Arjun Bhardwaj, Ran Zhao, Oscar Romeo, Sushma Akoju and Justine Cassell, **Socially-Aware Animated Intelligent Personal Assistant Agent**, Association for Computational Linguistics, Proceedings of the SIGDIAL 2016 Conference, pp. 224-227, September 2016.
- Yoichi Matsuyama, Tetsunori Kobayashi, **Towards a Computational Model of Small Group Facilitation**, AAAI 2015 Spring Symposia Turn-taking and Coordination in Human-Machine Interaction, March 2015.
- Yoichi Matsuyama, Iwao Akiba, Akihiro Saito and Tetsunori Kobayashi, **A Four-Participant Group Facilitation Framework for Conversational Robots**, Association for Computational Linguistics, Proceedings of the SIGDIAL 2013 Conference, Metz, France, pp. 284-293, August 2013.
- Yoichi Matsuyama, **SCHEMA: A Framework of Embodied Conversational Robots Facilitating Small Groups**, Embodied Situated & Language Processing, Potsdam, July 2013.
- Yoichi Matsuyama, Yushi Xu, Akihiro Saito, Shinya Fujie and Tetsunori Kobayashi, **Multiparty Conversation Facilitation Strategy Using Combination of Question Answering and Spontaneous Utterances**, IWSDS 2011 Workshop on Paralinguistic Information and its Integration in Spoken Dialogue Systems, pp.99-107, September 2011.
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Framework of Communication Activation Robot Participating in Multiparty Conversation**, AAAI 2010 Fall Symposia Dialog with Robots, pp.68-73, November 2010.
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Psychological Evaluation of A Group Communication Activation Robot in A Party Game**, Proceedings of Interspeech 2010, pp.3046-3049, September 2010.
- Yoichi Matsuyama, Kosuke Hosoya, Hikaru Taniyama, Hiroki Tsuboi, Shinya Fujie, Tetsunori Kobayashi, **SCHEMA: Multi-party Interaction-Oriented Humanoid Robot**, ACM SIGGRAPH ASIA 2009 Art Gallery & Emerging Technologies: Adaptation, pp. 82-82, December 2009.
- Shinya Fujie, Yoichi Matsuyama, Hikaru Taniyama, and Tetsunori Kobayashi, **Conversation Robot Participating in and Activating a Group Communication**, Proceedings of Interspeech 2009, pp.264- 267, September 2009
- Yoichi Matsuyama, Hikaru Taniyama, Shinya Fujie, Tetsunori Kobayashi, **System Design of Group Communication Activator: An Entertainment Task for Elderly Care**, ACM/IEEE Human-Robot Interaction 2009, San Diego, pp.243-244, March 2009.
- Yoichi Matsuyama, Hikaru Taniyama, Shinya Fujie, and Tetsunori Kobayashi, **Designing Communication Activation System in Group Communication**, Proceedings of Humanoids 2008, pp.629-634, December 2008.
- Shinya Fujie, Daichi Watanabe, Yuhi Ichikawa, Hikaru Taniyama, Kosuke Hosoya, Yoichi Matsuyama, and Tetsunori Kobayashi, **Multimodal Integration for Personalized Conversation: Towards a Humanoid in Daily Life**, Proceedings of Humanoids 2008, pp.617-622, December 2008.

Conference Papers in Japanese

- Yoichi Matsuyama, Alexandros Papangelis, Ran Zhao and Justine Cassell, **Dyadic Computational Model of Rapport Management**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD, December 2014.

- Yoichi Matsuyama, Akihiro Saito and Tetsunori Kobayashi, **Automatic Opinion Generation for Serendipitous Question Answering Systems**, Acoustical Society of Japan (ASJ) 2013 Autumn Meeting, NO.3-8-3, September 2013.
- Iwao Akiba, Yoichi Matsuyama and Tetsunori Kobayashi, **Facilitation Strategies for A Robot Maintaining Four-Participant Groups**, Acoustical Society of Japan (ASJ) 2013 Autumn Meeting, NO.3-8- 2, September 2013.
- Iwao Akiba, Yoichi Matsuyama and Tetsunori Kobayashi, **Procedures of Obtaining Initiatives for Multiparty Conversation Facilitation Robots**, Information Processing Society of Japan (IPSJ), SIG-SLP 97(10),1-8, July 2013.
- Yoichi Matsuyama, Akihiro Saito, Atsushi Ito, Iwao Akiba, Moemi Watanabe and Tetsunori Kobayashi, **Active Timing Detection and Strategies for Multiparty Conversation Facilitation Systems**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-B203-05, pp.17-24, February 2013 (*Annual Best Research Award, The Japanese Society for Artificial Intelligence SIG-SLUD*).
- Akihiro Saito, Yoichi Matsuyama, Azusa Todoroki and Tetsunori Kobayashi, **Natural Sentence Generation for Serendipitous Question Answering Systems**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-B203-01, pp.1-6, February 2013.
- Yoichi Matsuyama, Akihiro Saito, Iwao Akiba, Moemi Watanabe and Tetsunori Kobayashi, **Facilitation Robot Promoting the Greatest Participation of the Greatest Number in Multiparty Conversation**, Human-Agent Interaction Symposium 2012, 2B-3, December 2012 (*HAI-2012 Outstanding Research Award*).
- Yoichi Matsuyama, Shinya Fujie, Akihiro Saito and Tetsunori Kobayashi, **Design Patterns of Strategies for Multiparty Conversation Facilitation Systems**, Annual Conference of the Japanese Society for Artificial Intelligence (JSAI), 1O2-OS18-9, June 2012.
- Akihiro Saito, Yoichi Matsuyama, Shinya Fujie and Tetsunori Kobayashi, **Evaluation of Multiparty Conversation Facilitation Strategies of A Conversational Robot**, Technical Report of The Institute of Electronics,Information and Communication Engineering (IEICE), vol.111, no.225, SP2011-53, pp. 7-12, October 2011.
- Shinya Fujie, Yoichi Matsuyama, Akihiro Saito and Tetsunori Kobayashi, **Development of Conversation Robot Participating in Multiparty Conversation and Promoting Communication**, Acoustical Society of Japan (ASJ) 2011 Autumn Meeting, NO.3-10-6, September 2011.
- Akihiro Saito, Yoichi Matsuyama, Shinya Fujie and Tetsunori Kobayashi, **Multiparty Conversation Facilitation Strategy Using Combination of Question Answering and Spontaneous Utterance**, Annual Conference of the Japanese Society for Artificial Intelligence (JSAI), 3C2-OS19-10, June 2011.
- Yoichi Matsuyama, Shinya Fujie, Akihiro Saito, Xu Yushi and Tetsunori Kobayashi, **Communication Activation Oriented Conversation Robot: An Application in an Elderly Care Facility**, Technical Report of The Institute of Electronics, Information and Communication Engineering (IEICE), Vol.10, No.219, pp.7-12, October 2010.
- Shinya Fujie, Yoichi Matsuyama and Tetsunori Kobayashi, **Group Communication Activation Robot**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-B002, pp.7-10, October 2010.
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Impression Evaluation of Group Communication Activation Robot**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-B001-02, pp.7-12, July 2010.
- Hikaru Taniyama, Yoichi Matsuyama, Shinya Fujie and Tetsunori Kobayashi, **Development of Group Communication Robot based on Behavior Design with Participation Structure**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-A903, pp. 55-60, February 2010.
- Hikaru Taniyama, Yoichi Matsuyama, Shinya Fujie and Tetsunori Kobayashi, **Behavior Analysis of Group Communication Robot Based on Participation Structure**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-A901, pp.1-6, July 2009.
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Communication Activation System in Group Communication**, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-A801, pp.15-22, July 2008 (*Annual Best Research Award, The Japanese Society for Artificial Intelligence SIG-SLUD*).

Invited Talks

- Yoichi Matsuyama, **Socially Expressive Conversational AI Media Design**, Facebook AI Research Menlo Park, September 2018.
- Yoichi Matsuyama, **Conversational AI Media Design**, Google Japan, January 2018.
- Yoichi Matsuyama, **Embodied Language on Humanoid Robots**, Symposium on Robots as Media, School of Culture, Media and Society, Waseda University, December 2014.
- Yoichi Matsuyama, **Strategy and Language Generation for Multiparty Conversation Facilitation Robots**, NLP Seminar, Nagoya University, September 2013.
- Yoichi Matsuyama, **Conversation Robot Participating in and Promoting Multiparty Conversation**, Workshop on Social Robots For Assisted Living, University of Aalborg, Denmark, November 2011.

- Iwao Akiba, Yoichi Matsuyama and Tetsunori Kobayashi, **A Facilitation Robot Harmonizing A Four Participant Conversation**, International Workshop on Language and Speech Science, October 2013.
- Yoichi Matsuyama, **Multiparty Conversation Facilitation Strategies**, The 8th Global COE International Symposium on Ambient SoC, July 2011.
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Evaluation of Group Communication Activation Robot**, International Workshop on Language and Speech Science, October 2009.
- Yoichi Matsuyama, **Evaluation of Group Communication Activation System**, The 5th Global COE International Symposium on Ambient SoC, September 2009. (Outstanding Academic Achievements and Exceptional Performance)
- Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, **Designing Communication Activation System in Group Communication**, International Workshop on Language and Speech Science, September 2008.

Awards

- **HAI Symposium Outstanding Research Award**, Human Agent Interaction 2012, December 2012 (Yoichi Matsuyama, Akihiro Saito, Iwao Akiba, Moemi Watanabe and Tetsunori Kobayashi, Facilitation Robot Promoting the Greatest Participation of the Greatest Number in Multiparty Conversation, Human-Agent Interaction Symposium 2012, 2B-3, December 2012.)
- **JSAI-SIG-SLUD Annual Research Award**, The Japanese Society for Artificial Intelligence SIG-SLUD (Special Interest Group of Speech, Language Understanding and Discourse Processing), February 2012 (Yoichi Matsuyama, Akihiro Saito, Atsushi Ito, Iwao Akiba, Moemi Watanabe and Tetsunori Kobayashi, Active Timing Detection and Strategies for Multiparty Conversation Facilitation Systems, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-B203-05, pp.17-24, February 2013.)
- **JSAI-SIG-SLUD Annual Research Award**, The Japanese Society for Artificial Intelligence SIG-SLUD (Special Interest Group of Speech, Language Understanding and Discourse Processing), July 2008 (Yoichi Matsuyama, Shinya Fujie, Hikaru Taniyama and Tetsunori Kobayashi, Communication Activation System in Group Communication, The Japanese Society for Artificial Intelligence (JSAI), SIG-SLUD-A801, pp.15-22, July 2008.)
- **Microsoft Scholarship**, April 2009

Professional Services

Conference/Program Committee

- ACM SIGGRAPH Asia Committee Member (2008-2009)
- Group Interaction Frontiers in Technology Workshop (GIFT), International Conference on Multimodal Interaction 2018 (ICMI 2018), Program Committee
- NAACL-HLT 2018 (North American Chapter of the Association for Computational Linguistics: Human Language Technologies), Program Committee
- ACL 2018 (Annual Meeting of the Association for Computational Linguistics), Program Committee
- IWSDS 2018 (International Workshop on Spoken Dialogue Systems Technologies), Program Committee
- Journal of Human Interface Society Japan “Human Collaboration” 2018, Associate Editor
- RO-MAN 2016 (IEEE International Symposium on Robot and Human Interactive Communication), Associate Editor

Reviewer

- Journals
  - IEEE Pervasive Computing, Special Issue - Conversational User Interfaces and Interactions, 2018
  - Journal of Behavioral Research Methods, 2015
  - International Journal of Affective Engineering, 2015
  - IEEE/ACM Transactions on Acoustic, Speech and Language (TASLP), 2014
  - Journal of Japanese Society for Artificial Intelligence (JSAI), 2012, 2013
- Conferences
  - International Workshop on Spoken Dialogue System Technologies (IWSDS) 2017, 2018
  - Advanced Robotics, 2015
  - IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2014
  - International Conference on Virtual Agents (IVA), 2014

- International Conference on Social Robotics (ICSR), 2011

Conference/Session Organizer

- SIGDIAL 2016 Special Session Organizer: The Future Directions of Dialogue-Based Intelligent Personal Assistants
- ACM SIGGRAPH Asia 2009 Special Session Organizer: THE VISION IN ROBOTICS

Grants (PI/co-PI)

- Yahoo!-CMU InMind Project, 2015-2017 : co-PI … $300,000
- IT R&D program of MSIP/IITP [2017-0-00255, Autonomous digital companion development], Korean Government, 2017 - 2018 : co-PI … $600,000
- Google Faculty Award Grant “Grounding Task Behavior in the Social World: Deep Reinforcement Learning for Social Dialogue to Improve Task Performance”, 2017 : co-PI … $76,109
- Google Cloud Research Credits, “Socially Aware Conversational Agent”, 2015 - 2017 : PI … $50,000
- AWS Cloud Credits for Research, “Socially-Aware Conversational AI”, 2018 : PI… $30,000
- Microsoft Grant, “Socially Aware Robot Assistant”, 2017 : co-PI … $75,000 + Surface Hub
- CMU President Donation for SARA (2017) : co-PI... $100,000
- CMU ProSEED Crosswalk Seed Grant (2018) "Holographic Archive of Research Projects (HARP) : PI ... $2500
- CMU The Frank-Ratchye Fund for Art @ the Frontier, The Frank-Ratchye STUDIO for Creative Inquiry (2018) : PI… $500
- JSPS Grant-in-Aid for scientific research WAKATE-B (23700239), “Development and Evaluations of Multiparty Conversation Activation Systems”, 2010 - 2012 : PI … 3,900,000 JPY (approx. $40,000)
- JSPS Grant-in-Aid for scientific research WAKATE-B (25870824), “Facilitation Strategy for Multiparty Conversation Robots”, 2013-2015 : PI… 3,770,000 JPY (approx. $39,000)
- JSPS Takuetsu Grant, “WIZDOM - Digital Fabrication Lab Extension Fund”, 2014 : PI … 9,128,641 JPY (approx. $100,000)
- Yoichi Muraoka Grant, “WIZDOM - Digital Fabrication Lab Starup Fund”, 2012 : PI … 1,000,000 JPY (approx. $10,000)

Inventions

Patents

- Conversational Robot (Japan 2010-221556)
- Conversational Facilitation System and Robot (Japan 2008-304140)

Disclosure of Invention

- Deep Neural Network Based Conversational Strategy Classifier (CMU Disclosure of Invention, August 2017)
- Rapport-Building Animated Virtual Agent for Dyadic Conversation (CMU Disclosure of Invention, April 2016)
- Social Reasoner (CMU Disclosure of Invention, April 2017)
- Action Synthesizer and Behavior JSON Standard (CMU Disclosure of Invention - in-preparation)

Selected List of Research Intern Mentorship

Natural Language Understanding and Generation

- Zihan (Atlas) Yu (Computer Engineering minor in Studio Arts, University of Pittsburgh), **SocioText2Face: Socio-Emotionally Conditioned Facial Expression Generation Given Text Inputs**, Intern 2018 Summer.
- Pranav Goel (Computer Science, International Institute of Information Technology), **Deep Neural Network Based Conversational Strategy Classifier**, Intern 2017 Summer … now with University of Maryland.
- Wei Wang (Computer Science, Tsinghua University), **Socially Conditioned Natural Language Generation using Recurrent Neural Networks**: Intern 2017 Summer… now with Carnegie Mellon University.
- Vivian Tsai (Computer Science, Johns Hopkins University), **Incremental Socially Conditioned Natural Language Generation**: Intern 2018 Summer.
- Ying Shen (Computer Science, Fudan University), **Natural Language Understanding, and Recurrent Neural Networks for Speech Markup Language (SSML) Generation**: Intern 2016 Summer … now with Language Technologies Institute, Carnegie Mellon University.

- Zhao Meng (Computer Science, Peking University), **Natural Language Generation using OpenCCG**: Intern 2016 Summer … now with ETH Zurich.
- Akihiro Saito (Master of Computer Science, Waseda University), **Automatic Expressive Opinion Sentence Generation for Enjoyable Conversational Systems**: 2010 - 2012.

Dialogue Management

- Zian Zhao (Shanghai Jiao Tong University), **Socially-Conditioned Task Reasoning for a Virtual Tutoring Agent**: Intern 2017 Summer.
- Kweonwoo Jung (Mathematics, Carnegie Mellon University), **User Simulation for Deep Reinforcement Learning Dialogue Manager of Socially Aware Conversational Agents**: Independent Study 2016 Spring … now with Naver Corporation.
- Yan Ting (Electronic Information Engineering, Beihang University), **Statistical Dialogue State Tracking**: Intern 2016 Summer … now with Dartmouth University.
- Xuchen You (Physics, Peking University), **Inverse Reinforcement Leaning for Adaptive Social Reasoning**: Intern 2016 Fall.
- Iwao Akiba (Master of Computer Science, Waseda University), **Facilitation Strategy Controlling Engagement Density As the Fourth Participant**: 2012 - 2014 ... now with Google, LLC.
- Moemi Watanabe (Department of Computer Science, Waseda University), **Partially Observable Markov Decision Process (POMDP) for Engagement Management**: 2012 ... now with NTT Data Corporation.
- Azusa Todoroki (Department of Computer Science, Waseda University), **Topic Detection and Management in Movie Recommendation Scenario**: 2012 ... now with Sony Corporation.

Nonverbal Behavior Understanding

- XuHai (Orson) Xu (Industrial Engineering, Tsinghua University), **Automatic Listening Gesture Generation, and Computational Model of Rapport**: Intern 2016 Summer.
- Divya Sai (Computational Linguistics, International Institute of Information Technology), **Automatic Head-nod Detection**: Intern 2016 Summer.
- Atsushi Ito (Master of Computer Science, Waseda University), **Speaker and Addressee Classification using Nonverbal Cues in a Small Group**: 2012 - 2014 ... now with Yahoo Japan Corporation.

System Architecture Design and Integration

- Vaibhav Nachankar (Master of Information Systems Management, Carnegie Mellon University), **Development of Recommendation Engine and Wizard-of-Oz User Interface**, Intern 2018 Spring.
- Luo Yi Tan (Entertainment Technology Center, Carnegie Mellon University), **Character Development in Unity3D** : Graphic Programmer 2016 ... now with Unity Technologies.
- Anna Tan (Cognitive Science and Computer Science, Carnegie Mellon University), **User Modeling for SARA at World Economic Forum**: Independent Study 2016 Fall.
- Sara Daraei (Applied Mathematics, Sharif University of Technology), **Computational Architecture for Rapport-Aligning Peer Tutoring Agent**: Intern 2015 Summer ... Now with University of Pittsburgh.
- Shan Han (Computer Science, Tsinghua University), **System Implementation of InMind Agent User Study**: Intern 2015 Summer … now with Carnegie Mellon University.
- Emily Zhou (Computer Sciece and Art, Minor in Animation and Special Effecrs), **User Interface Design and Development of InMind Agent**, 2015.
- Hikaru Taniyama (Master of Computer Science, Waseda University), **SCHEMA Platform Development and Behavior Design**: 2008 - 2010 … now with SQUARE ENIX Co., Ltd.

Human-Agent / Human-Human Data Analysis

- Deepika Mittal (Masters in Human Computer Interaction, Carnegie Mellon University), **Discourse Analysis and Scenario Design of Information Desk Agent**, Independent Study 2018 Spring … now with Amazon (Alexa team)
- Shuangni (Annie) Huang (Humanities & Arts in Decision Science and Fine Art, Additional Major in Human-computer Interaction, Carnegie Mellon University), **Use Interface Design for Socially-Aware Conversational Agent in Information Desk Scenario**, Intern 2018 Spring.
- Neeti Ganjur (Science in Electrical & Computer Engineering and Engineering & Public Policy, Carnegie Mellon University), **Developing Anonymization Pipeline of Human-Human Conversational Dataset**, Intern 2018 Spring.
- Jiayi (Cindy) Su (Information Systems, Carnegie Mellon University), **Conversational Dataset Construction for Information Desk Scenario**, Intern 2018 Spring.

- Jingya Chen (Automobile Engineering, Tsinghua University), **Field Study Analysis of a Socially Aware Robot Assistant at World Economic Forum**,: Intern 2017 Summer ... Now with Carnegie Mellon University.
- Jiajia Li (Ph.D Visiting Scholar, Digital Media Art, Communication University of China), **Designing Embodied Conversatioal Intelligent Personal Assistant**: 2015 - 2017 ... now with Qingdao University

Selected Media Coverage

SARA Project (Carnegie Mellon University - Project Lead)

- **MIT Technology Review**, Chatbots with Social Skills Will Convince You to Buy Something, 2016.
- **Google Blog**, At Carnegie Mellon University, machine learning gets social, 2018.
- **Washington Post**, The big contradiction in how the world's most powerful people think about its future, 2017.
- **BBC Business Daily**, Talking to Robots, 2017.
- **Science Friday**, Are Digital Assistants Smart Enough to Do Their Jobs?, 2016.
- **FOREIGN POLICY**, Is AI Sexist?, 2016.
- **Popular Science**, S.A.R.A. Seeks To Give Artificial Intelligence People Skills, 2016.
- **CNET**, The Advent of Virtual Humans, 2016.
- **CNBC**, Best of World Economic Forum in Tianjin, 2016.
- **HUMAN INSIDE** (Orange), S.A.R.A., the sensitive robot who improves people's performance, 2017.
- **USA TODAY**, This robot assistant can understand facial expressions, 2017.
- **BLOOMBERG QUINT**, SARA: A socially aware robotic assistant that reads your mood, 2017.
- **CCTV** (China Central Television), 2016.
- **CNBC AFRICA**, Meet SARA, the socially-aware robot, 2017.
- **Tartan** (Carnegie Mellon's Student Newspaper) The Frontier Conference exhibits featured new technology, 2016.
- **Radio Sputnik**, These are robots that intend to make society stronger by focusing on social bond, 2017.
- **Atelier.net**, chatbots of growing human , 2016.
- **Radio Canada**, Here are 4 robots at your service, 2016.
- **AL ARABIYA**, Meet Sara…the robot that knows the ins and outs of Davos, 2017.
- **PressTV**, Socially Aware Robot Assistant Displayed at WEF , 2017.
- **INDIA TIMES**, Now, a socially-aware robotic assistant that gets your mood!, 2017.
- **THE TRIBUNE**, A robotic assistant that gets your mood! , 2017.
- **DAILY NEWS AND ANALYSIS** (DNA), Fourth industrial revolution on full display at the WEF, 2017.
- **FINANCIAL TIMES**, Tech leaders at Davos fret over effect of AI on jobs, 2017.
- **JLL** (Sushell Koul), From macro to machines, 2017.
- **CMSWIRE**, Step Up Your Personalization Game with AI, 2017.
- **TECH FACTS LIVE**, Socially Aware Robotic Assistant Introduced at World Economic Forum, 2017.
- **ROBOTICS AND AUTOMATION NEWS**, Job-stealing robots a growing concern for world leaders, 2017.
- **PTS NEWS NETWORK**, Socially-Aware robot frees humans from repetitive work, 2017.
- **DIGITAL MARKETING BUREAU**, Sara: The Socially Aware Robot Assistant, 2017.
- **D!GITALIST MAGAZINE**, Empathy: The Killer App for Artificial Intelligence, 2017.
- **Zee News**, Here's a socially-aware robotic assistant that gets your mood!, 2017.
- **The Indian Express**, Now, a socially-aware robotic assistant (SARA) that gets your mood, 2017.
- **IBM**, Bots and AI: The Cutting Edge of Customer Care, 2017.

SCHEMA Project (Waseda University - Project Lead)

- **Yomiuri Shimbun**, "Towards the Bright Future of Human and Robots", January 1, 2014.
- **Asahi Shimbun**, "Leading Research of Robotics in Waseda University", October 26, 2013.
- **NHK** (Science ZERO), "Robots of the Future - Cooking, Washing and Entertainment!", April 22, 2012.
- **Yomiuri Shimbun**, "Conversational Robot SCHEMA - Awareness of Gaze and Behaviors", April 30, 2012

References

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