

Jun Ki Lee

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Education

Brown University, *Jun 2013 ~ Oct 2022*

Degree : Doctor of Philosophy, Computer Science

Advisor : Prof. Michael L. Littman

Dissertation : Explaining Reinforcement Learning Agents by Policy Comparison

Brown University, *Jun 2013 ~ May 2015*

Degree : Master of Science, Computer Science

Massachusetts Institute of Technology, *Sep 2006 ~ Feb 2009*

Degree : Master of Science, Media Arts and Sciences

Advisor : Prof. Cynthia Breazeal (The Personal Robots Group)

Thesis : Affordable Avatar Control System for Personal Robots

Seoul National University, *Mar 1999 ~ Feb 2006*

Degree : Bachelor of Science, Computer Science and Engineering

Honors : Summa Cum Laude

Work Experiences

Research Assistant, Brown University, Providence, RI, USA, *Jun 2013 ~ Sep 2022*

Conducted a research on developing a novel method to perform a policy comparison analysis for reinforcement learning agents. Participated in XAI (Explainable Artificial Intelligence) project funded by DARPA in collaboration with CRA and Umass Amherst. Developed various methods to analyze generalization on deep learning agents.

Instructor, Brown University, Providence, RI, USA, *Jan 2016 ~ Jun 2016*

Taught CSCI 0931, Introduction to Computation for the Humanities and Social Sciences. Gave a lecture twice-weekly. Planned and edited existing materials and managing a staff of 4 undergraduate TAs.

Teaching Assistant, Brown University, Providence, RI, USA, *Sep 2015 ~ Dec 2015*

Was a graduate teaching assistant (GTA) for CSCI1410 Applied Artificial Intelligence taught by Prof. Stefanie Tellex. Redesignated and implemented a class project about the FastSLAM algorithm. Wrote the parts of both the midterm and final exams.

Software Engineer, Vecna Technologies, Inc., Cambridge, MA, USA, *Jan 2011 ~ May 2013*

Developed web applications for hospital kiosks. Programmed both the server and client side of the application with Java EE, JSP, Hibernate, Struts, Spring, Javascript (AJAX), and HTML5/CSS3. Developed Android applications for hospital applications.

Freelance Software Engineer, *Jan 2010 ~ Dec 2010*

Designed and developed an educational iPad applications on the iOS platform using both the native objective-c language and web technologies (HTML5, CSS3 and Javascript).

Technical Assistant, The Personal Robots Group, The Media Lab, Massachusetts Institute of Technology, Cambridge, MA, USA, *Oct 2008 ~ Dec 2009*

Designed and conducted two empirical user studies to evaluate the facial features of the MDS robot platform with senior citizens in the Greater Boston Area. Developed a dialogue system for the MDS humanoid platform with a gazing capability.

Research Assistant, The Personal Robots Group, The Media Lab, Massachusetts Institute of Technology, Cambridge, MA, USA, *Sep 2006 ~ Aug 2008*

Developed a sympathetic interface and web interface for a teddy bear like personal robot called the Huggable. Designed a software infrastructure to remotely control a personal robot using a haptic user interface called 'sympathetic interface'.

Software Engineer, Thingsoft Co., Neowiz Co., Seoul, Korea, *Feb 2006 ~ July 2006*

Worked in the FIFA Online 2006 team in association with the EA Sports, Co, Canada. Designs User Interface for online front-end system and Servers which exchange inner game data.

Researcher and Developer in Multimedia, Samsung Electronics Software Membership (SSM), Seoul, Korea, *Jun 2000~Aug 2001*

Worked in the Audio Visual laboratory which was especially founded to promote media art and human computer interaction projects. Participated in three artistic and engineering projects: PolyMorphes, Ripple of Emotion(2000) and Trialogue(2001). SSM is a private institution being ran by Samsung Electronics, Co. to promote research activities among collegiate students.

Software Engineer Intern, Nexon Co., Seoul, Korea, *Jan 2001 ~ Feb 2001*

Worked in the Centralized Game Sever Programming Team that managed over 50,000 concurrent user connections. Analyzed and modified the code for game servers to meet user requests during the intern period.

Publications

S. Witty, J. K. Lee, E. Tosch, A. Atrey, K. Clary, M. L. Littman, and D. Jensen (2021), "**Measuring and Characterizing Generalization in Deep Reinforcement Learning**," Applied AI Letters 2 (4), e45.

G. Wang, C. Trimbach, J. K. Lee, M. K. Ho, M. L. Littman (2020), "**Teaching a robot tasks of arbitrary complexity via human feedback**," Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction.

M. Cooper, J. K. Lee, J. Beck, J. D. Fishman, M. Gillett, Z. Papakipos, A. Zhang, J. Ramos, A. Shah, and M. L. Littman (2019), "**Stackelberg punishment and bully-proofing autonomous vehicles**," in 2019 Interactional Conference on Social robotics, 368-377.

D. Arumugam, J. K. Lee, S. Saskin, and M. L. Littman (2019), "**Deep reinforcement learning from policy-dependent human feedback**," on Arxiv preprint, arXiv:1902.04257.

D. Arumugam, D. Abel, K. Asadi, N. Gopalan, C. Grimm, J. K. Lee, L. Lehnert, M. L. Littman (2018), "**Mitigating Planner Overfitting in Model-Based Reinforcement Learning**," on Arxiv preprint, arXiv:1812.01129.

J. K. Lee, and O. C. Jenkins (2014) "**Goal-Based Teleoperation for Robot Manipulation**", presented at 2014 AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction, Arlington, Va.

J. K. Lee, C. Breazeal (2010) "**Human Social Response toward Humanoid Robot's Head and Facial Features**," in Work-In-Progress in the Extended Abstract of CHI 2010, April 10-15, 2010, Atlanta, GA.

J. K. Lee, W. D. Stiehl, R. Toscano, C. Breazeal (2009) "**Semi-Autonomous Robot Avatar as a Medium for Family Communication and Education**," Advanced Robotics, Vol. 23(14), pp 1925-1945.

W. D. Stiehl, J. K. Lee, C. Breazeal, M. Nalin, A. Morandi, and A. Sanna (2009) "**The Huggable: A Platform for Research in Robotic Companions for Pediatric Care**," in Workshop on Creative Interactive Play for Disabled Children held at the 8th International Conference on Interaction Design and Children (IDC2009) Como, Italy.

W. D. Stiehl, J. K. Lee, and C. Breazeal (2009), “**The Huggable Project: Building a Personal Robotic Companion System For Healthcare, Education, Family Communication, and Entertainment**”, In CHI 2009 Workshop on The Reign of Catz and Dogz..

W. D. Stiehl, J. K. Lee, R. Toscano, and C. Breazeal (2008), “**The Huggable: A Platform for Research in Robotic Companions for Eldercare**,” presented at AAAI Fall Symposium on AI in Eldercare, Washington, D.C., 2008.

J. K. Lee, R. L. Toscano, W. D. Stiehl and C. Breazeal (2008), “**The Design of a Semi-Autonomous Robot Avatar for Family Communication and Education**,” Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), pp 166-173, August 2008.

Presentation (Oral and Poster)

J. K. Lee and M. L. Littman (2022), “**Explaining Reinforcement Learning Agents by Policy Comparison**”, The 2022 Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM), Providence, RI

S. Witty, J. K. Lee, E. Tosch, A. Atrey, M. L. Littman, and D. Jensen (2018), “**Measuring and Characterizing Generalization in Deep Reinforcement Learning**,” in NeurIPS 2018 Workshop, Critiquing and Correcting Trends in Machine Learning.

J. K. Lee (2015), “**Teleoperation for Robot Manipulation through Goal Specification**”, PhD Forum, the 2015 IEEE International Conference on Robotics and Automation (ICRA), Seattle, WA.

Patents

Lee, H., Ota, Y., Breazeal, C., and Lee, J. K., “**Methods of robot behavior generation and robots utilizing the same**”, U.S. Patent, 8,751,042, Filed in Dec, 2011, and Issued in Jun, 2014.

Stiehl, W. D., Breazeal, C., Lee, J. K., Maymin, A. Z., Knight, H., Toscano, R., and Cheung, I. M., “**Interactive Systems Employing Robotic Companions**”, U.S. Patent, 8,909,370, Filed in May, 2008, and Issued in Dec, 2014.

Awards and Scholarships

Recipient, the Graduate Study Abroad Scholarship, supported by Samsung Scholarship Foundation, Seoul, Korea, 2006~2008.

Recipient, Merit based scholarships for academic excellence from Seoul National University, 1999~2002.

1st, 5th Place, Asian Regional ACM International Collegiate Programming Contest (ICPC), Taipei, Taiwan, 2000, 2001.

5th, 3rd Place, Asian Regional ACM International Collegiate Programming Contest (ICPC), Taejon, Korea, 2000, 2001.

Winner, The 4th Computer Music Contest in Korea, sponsored by Korean Electro-Acoustic Music Society , Seoul, Korea, 2001

Silver award winner and Bronze award winner, Samsung Electronics Software Membership Award, sponsored by Samsung Electronics Co., Ltd., Seoul, Korea, 2001, 2000.

Skills

Programming: Python, C/C++, Java, Javascript, HTML5, CSS,

Languages: Korean(Native), English(Fluent)