

Dongkyu Choi

Department of Aerospace Engineering
University of Kansas

Contact Information:

2120 Learned Hall
1530 W 15th St.
Lawrence, KS 66045-7621 USA

Office: +1-785-864-2924
E-mail: dongkyuc@ku.edu
Website: <http://ccsl.ku.edu/>

Education:

PhD. (2010) Aeronautics and Astronautics, Stanford University, CA, USA
with minor in Computer Science
Dissertation: *Coordinated Execution and Goal Management
in a Reactive Cognitive Architecture*
Committee: Pat Langley, Stephen M. Rock, Nils Nilsson, Sanjay Lall

M.S. (2003) Aeronautics and Astronautics, Stanford University, CA, USA

B.Eng. (2001) Aerospace Engineering, Seoul National University, Korea

Professional Experience:

2012- Assistant Professor
Department of Aerospace Engineering, University of Kansas

2016 Summer Faculty Fellow
Naval Research Laboratory, Washington, DC

2009-2011 Visiting Research Specialist / Postdoctoral Research Associate
Department of Psychology, University of Illinois at Chicago

2003-2009 Research Assistant
Computational Learning Laboratory, CSLI, Stanford University

2003-2009 Research Assistant
Institute for the Study of Learning and Expertise, Palo Alto, CA

2002 Student Coordinator in Europe
International Masters in Aerospace, Stanford University

1997-2000 Computer Systems Engineer / Bilingual Translator
Korean Augmentation to the United States Army, Korea

1997 Quality Inspection Engineer (summer intern)
Taesan LCD Inc., Korea

1996 CAD Engineer (summer intern)
Korea Aerospace Research Institute, Korea

2005-2009 Transfer Learning in Integrated Cognitive Systems
Defense Advanced Research Projects Agency [\$12,242,291]

The focus of this project is to develop and demonstrate the transfer of knowledge learned in one situation to another with different levels of similarity. Dongkyu Choi has mainly worked on the performance module, which translates and uses acquired knowledge as well as base knowledge about the given domain, and executes skills in the simulated world. As a senior PhD-level student, he coordinated project-related efforts at an intermediate position between project managers and other graduate students.

2003-2005 New Research Directions in Integrated Cognitive Architectures
National Science Foundation [\$99,271]

Using simulated urban driving domains in both 2-D and 3-D, Dongkyu Choi developed an intelligent agent that can drive around, deliver packages, and perform other related tasks. This project provided a great opportunity to improve his development skills, as well as a testbed he can work with both for other projects and his thesis work.

Journal Publications & Thesis:

Kim, E. & Choi, D. (2015). A 3D Ad Hoc Localization System using Aerial Sensor Nodes. *Journal of IEEE – Sensors*, 15(7), 3716 – 3723.

Choi, D. (2011). Reactive goal management in a cognitive architecture. *Cognitive Systems Research*, 12, 293-308.

Choi, D. (2010). *Coordinated Execution and Goal Management in a Reactive Cognitive Architecture*. PhD thesis, Stanford University, Stanford, CA.

Langley, P., Choi, D., & Rogers, S. (2009). Acquisition of hierarchical reactive skills in a unified cognitive architecture. *Cognitive Systems Research*, 10(4), 316-332.

König, T., O'Rourke, P., Shapiro, D., Choi, D., Nejati, N., & Langley, P. (2009). Skill transfer through goal-driven representation mapping. *Cognitive Systems Research*, 10(3), 270-285.

Langley, P. & Choi, D. (2006). Learning recursive control programs from problem solving. *Journal of Machine Learning Research*, 7, 493-518.

Recent Conference/Symposium Papers:

Kim, J. & Choi, D. (2016). Design and Control of a Novel Tiltrotor Platform. In *Proceedings of AIAA Infotech @ Aerospace, AIAA Science and Technology Forum and Exposition*, San Diego, CA.

- To, S. T., Langley, P., & Choi, D. (2015). A Unified Approach to Knowledge-Learn and Knowledge-Rich Planning. In *Proceedings of the Third Annual Conference on Advances in Cognitive Systems*, Atlanta, GA.
- Choi, D., Kim, K., Kim, D., & You, B.-J. (2011). Problem solving and learning for a humanoid robot. In *Proceedings of the IEEE International Conference on Robotics and Biomimetics*, Phuket, Thailand: IEEE Press.
- Kim, K., Choi, D., Lee, J.-Y., Park, J.-M., & You, B.-J. (2011). Controlling a humanoid robot in home environment with a cognitive architecture. In *Proceedings of the IEEE International Conference on Robotics and Biomimetics*, Phuket, Thailand: IEEE Press.
- Choi, D. & Ohlsson, S. (2011). Interoperating learning mechanisms in a cognitive architecture. In *Proceedings of the AAAI 2011 Fall Symposium on Advances in Cognitive Systems*, Arlington, VA: AAAI Press.
- Choi, D. & Ohlsson, S. (2011). Effects of multiple learning mechanisms in a cognitive architecture. In *Proceedings of the 33rd Annual Meeting of the Cognitive Science Society*, pp. 3003-3008, Boston, MA: Cognitive Science Society, Inc.
- Kim, K., Lee, J.-Y., Choi, D., Park, J.-M., & You, B.-J. (2010). Autonomous task execution of a humanoid robot using a cognitive model. In *Proceedings of the IEEE International Conference on Robotics and Biomimetics*, Tianjin, China: IEEE Press.
- Choi, D. & Ohlsson, S. (2010). Learning from failures for cognitive flexibility. In *Proceedings of the 32nd Annual Meeting of the Cognitive Science Society*, Portland, OR: Cognitive Science Society, Inc.
- Choi, D. (2010). Nomination and prioritization of goals in a cognitive architecture. In *Proceedings of the 10th International Conference on Cognitive Modeling*, Philadelphia, PA: Drexel University.
- Choi, D. (2010). Reactive goal management in a cognitive architecture. In *Proceedings of the AAAI-2010 Workshop on Goal-Directed Autonomy*, Atlanta, GA: AAAI Press.
- Choi, D. & Ohlsson, S. (2010). Cognitive flexibility through learning from constraint violations. In *Proceedings of the Nineteenth Annual Conference on Behavior Representation in Modeling Simulation*, Charleston, SC.
- Choi, D., Kang, Y., Lim, H., & Yoo, B.-J. (2009). Knowledge-based control of a humanoid robot. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, St. Louis, MO: IEEE Press.
- Choi, D. (2009). Concurrent execution in a cognitive architecture. In *Proceedings of the 31st Annual Meeting of the Cognitive Science Society*, Amsterdam, Netherlands: Cognitive Science Society, Inc.

Ali, K., Leung, K., Könik, T., Choi, D., & Shapiro, D. (2009). Knowledge-directed theory revision. In *Proceedings of the Seventeenth International Conference on Inductive Logic Programming*, Leuven, Belgium: Springer-Verlag.

Li, N., Choi, D., & Langley, P. (2007). Adding goal priorities to teleoreactive logic programs. In *Proceedings of the International Symposium on Skill Science*, Tokyo, Japan.

Park, C. & Choi, D. (2007). Managing resources through parallel skill execution. In *Proceedings of the International Symposium on Skill Science*, Tokyo, Japan.

Choi, D., Könik, T., Nejati, N., Park, C., & Langley, P. (2007). Structural transfer of cognitive skills. In *Proceedings of the Eighth International Conference on Cognitive Modeling*, Ann Arbor, MI.

Choi, D., Morgan, M., Park, C., & Langley, P. (2007). A testbed for evaluation of architectures for physical agents. In *Proceedings of the AAI-2007 Workshop on Evaluating Architectures for Intelligence*, Vancouver, BC: AAI Press.

Choi, D., Könik, T., Nejati, N., Park, C., & Langley, P. (2007). A believable agent for first-person shooter games. In *Proceedings of the Third Annual Artificial Intelligence and Interactive Digital Entertainment Conference*, Stanford, CA: AAI Press.

Langley, P. & Choi, D. (2006). A unified cognitive architecture for physical agents. In *Proceedings of the Twenty-First National Conference on Artificial Intelligence*, Boston: AAI Press.

* See <http://www.dongkyu.com> for papers published before 2005.

Professional Service:

Organizing Committee Member: CogSci 2010 – 2014

Program Committee Member: AAI 2012

Journal Reviewer: Artificial Intelligence; Machines (2013)

Computational Intelligence (2011)

Cognitive Systems Research (2011)

Artificial General Intelligence (2011)

Conference Reviewer: IROS 2013, ICAR 2013, Humanoids 2012, CogSci 2012

ICRA 2011, CogSci 2011, BRiMS 2010, and others

Session Chair: IROS 2009

Certifications and Languages:

Microsoft Certified Professional (MCP) (1997-)

Microsoft Certified Systems Engineer (MCSE) (1997-2001)

Korean (native), English (fluent), Japanese (limited)