

Heejin Lim, Ph. D.

Department of Neurobiology and Anatomy
The University of Texas Medical School at Houston
6431 Fannin St. Houston, TX 77030

E-mail: heejin.lim@uth.tmc.edu
Phone: 713-500-5552

Education

- Aug 2006 **Ph.D.** Department of Computer Science, Texas A&M University
Dissertation Title: *Facilitatory Neural Dynamics for Predictive Extrapolation.*
Doctoral Committee: Yoonsuck Choe (chair), Nancy Amato, Dezhen Song, Takashi Yamauchi, and Won-Jong Kim.
- Feb 1993 **M.S.** Department of Computer Science, Keimyung University, Daegu, Korea.
Thesis Title: *An Extension of Event Calculus for Temporal Knowledge Representation*
Thesis Advisor: Jinsang Kim.
- Feb 1991 **B.S. Summa Cum Laude**, Department of Computer Science, Keimyung University, Daegu, Korea.

Work Experience

- 2007. January - Present: Research Fellow (postdoc) under Daniel J. Felleman
 - Department of Neurobiology and Anatomy, The University of Texas Health Science Center Medical School at Houston.
 - Investigate functional organization of visual cortex in macaque monkeys (color, orientation, and complex shape perception in V2 and V4).
- 2004-2006: Teaching Assistant
 - Department of Computer Science, Texas A&M University.
 - Graduate & Undergraduate courses (Artificial Intelligence, Introduction to Computing, Structured C Programming, Data Structure with Java).
- 2000-2003: Research Assistant
 - Multidisciplinary Research Program of the DARPA MURI project.
 - Involved in developing User Modeling Tool (using machine learning and data mining techniques) for analysis of skill mastering level in flight training simulation.
- 1993-2000: Researcher & Software Developer
 - Electronics and Telecommunications Research Institute, Daejeon, Korea.
 - Involved in developing telecommunication protocol INAP (intelligent network application protocol) embedded in Switching Systems.
 - Involved in developing prototype for advanced intelligent switching systems.

Honors

- Recognized as a Departmental Scholarship Recipient in Honor of Outstanding Former Student Dr. Ronnie Ward, Spring Banquet of Computer Science Dept., Hilton Hotel, College Station, TX, 2005.
- Keimyung University President's Award. A top honor presented to the best student in the graduating class, 1991.
- Invitation to a luncheon with the President of Korea held in honor of top graduating students at Universities throughout Korea, 1991.

Scholarship & Grant

- IEEE Student Travel Grant Award for IJCNN (International Joint Conference on Neural Networks), July, 2006.
- ACM/SIGEVO Student Travel Grant Award for GECCO (Genetic and Evolutionary Computation Conference), July, 2006.
- Graduate Student Research and Presentation Grant: Funded by the Association of Former Students and the Office of Graduate Studies at Texas A&M University, Summer, 2006.
- IEEE Student Travel Grant Award for IJCNN (International Joint Conference on Neural Networks), July 2005.
- Student Travel Grant Award for WAM-BAMM (World Association of Modelers First Annual Biologically Accurate Modeling Meeting), April 2005.
- Departmental Scholarship in Honor of Outstanding Former Student Dr. Ronnie Ward: Granted by the Department of Computer Science, Texas A&M University, Spring 2005.
- Scholarship for Research Support: Granted by National Research Lab (ETRI), 1992.
- Scholarship for Graduate Student Research Support: Granted by Mu-Jin Science Foundation, 1991-1992.
- Honor Student Scholarship: Granted by Keimyung University, 1987-1990.

Services

- Paper Review
 - IEEE World Congress on Computational Intelligence 2008.
 - International Joint Conference on Neural Networks (IJCNN) 2007.
 - Neural Network Journal (Special issue for IJCNN 2007).
 - IEEE Conference on Cybernetics and Intelligent Systems (CIS) 2004.
- Served as a Technical Committee in WCCI 2008 (IJCNN section).
- Served as a Panelist in a Graduate Student Panel for Undergraduate Summer Research Grants Program (USRG) at Texas A&M University, Aug 8, 2005.

- Research Mentoring for Undergraduate Student. Undergraduate Summer Research Grants Program (USRG) at Texas A&M University, Summer 2005 (Student received *Best Poster* award).
- Mentoring for New Graduate Students in the Department of Computer Science at Texas A&M University, 2003-2005.

Professional Activity

- Member of Society for Neuroscience.

Talks

- Slide talk at Annual Meeting of Society for Neuroscience, *Selectivity for Luminance and Chromatic Contrast-Defined Contours Distinguish V2 Thin, Thick, and Interstripes*, San Diego, Nov. 4, 2007.
- Invited talk in the Department of Neurobiology and Anatomy at the University of Texas-Houston Medical School (hosted by Dr. Valentin Dragoi). *Facilitatory Neural Dynamics for Predictive Extrapolation*. June 30, 2006.
- Guest Lecture in Graduate Class of Machine Learning (Instructor: Yoonsuck Choe). *Synaptic Learning: Facilitating Synapses and Spike-Timing Dependent Plasticity for Delay Compensation*. Department of Computer Science, Texas A&M University, Feb 6, 2006.
- Parasol Seminar (Departmental Research Seminar hosted by Dr. Nancy Amato): *Facilitatory Neural Dynamics for Predictive Extrapolation*. Department of Computer Science, Texas A&M University, Jan 27, 2006.
- Guest Lecture in Graduate Class of Artificial Intelligence (Instructor: Yoonsuck Choe). *Extrapolatory Perception using Facilitating Synapses: a Potential Neural Basis for Delay Compensation*. Department of Computer Science, Texas A&M University, Nov 29, 2005.
- Parasol Seminar: *Facilitatory Neural Activity for Delay Compensation in the Nervous System*. Department of Computer Science, Texas A&M University, Oct 21, 2005.

Publications

- Journal Papers

- H. Lim, Y. Wang, Y. Xiao, D. A. Gutnisky and D. J. Felleman. *V2 interstripes contain feature-independent orientation maps yet differ in their tuning bandwidths for luminance- and chromatic-defined contours*. In preparation.
- H. Lim and Y. Choe. *Extrapolative Delay Compensation Through Facilitating Synapses and Its Relation to the Flash-lag Effect*. IEEE Transactions on Neural Networks, 2008, In press.
- H. Lim and Y. Choe. *Compensating for Neural Transmission Delays Using Extrapolatory Neural Activation in Evolutionary Neural Networks*. Neural Information Processing - Letters and Reviews, 10: 147-161, 2006.

- Conference Papers

- D. J. Felleman and H. Lim. *The Role of Color in Surface and Contour Processing in Visual Cortical Area V2*. 25th Annual Houston Conference on Biomedical Engineering Research 2008, Slides, Houston, Feb. 7-8, 2008.
- H. Lim and Y. Choe. *Facilitatory Neural Dynamics for Delay Compensation and Prediction in Evolutionary Neural Networks*. Genetic and Evolutionary Computation Conference (GECCO 2006), Nominated for **Best Paper** Award in the Artificial Life/Evolutionary Robotics/Adaptive Behavior track, 167-174, Seattle, WA, July 7-12, 2006.
- H. Lim and Y. Choe. *Delay Compensation Through Facilitating Synapses and STDP: A Neural Basis for Orientation Flash-Lag Effect*. International Joint Conference on Neural Networks (IJCNN 2006), 8385-8392, Vancouver, BC, Canada, July 16-21, 2006.
- H. Lim and Y. Choe (2005). *Facilitatory Neural Activity Compensating for Neural Delays as a Potential Cause of the Flash-Lag Effect*. In Proceedings of the International Joint Conference on Neural Networks (IJCNN 2005), 268-273, Montreal, Canada, July 31-August 4, 2005.
- H. Lim and J. Yen (2004). *Preliminary Study of Attention Control Modeling for Complex Skills Training Environments*. Ahmed Y. Tawfik & Scott D. Goodwin Eds., Advances in Artificial Intelligence, Lecture Notes in Artificial Intelligence 3060, 120-132, Springer, 2004.
- H. Lim and G. Choi (1999). *Implementation of Intelligent Network Application Protocol for an Intelligent Peripheral*. In Proceedings of the International Conference on Telecommunications (ICT 99), vol. 1, 78-82, Cheju, Korea, June 15-18, 1999.
- H. Lim and G. Choi (1998). *Application of INAP to AIN Intelligent Peripheral*. International Workshop on Advanced Intelligent Network, Lecture Notes in Computer Science 1385, 278-290, Springer, April 1998.
- H. Lim et al. (1997). *A Study on Centralized Call Model Supporting Mobility for Broadband IN*. In Proceedings of 3rd IEEE Malaysia International Conference on Communications, Kuala Lumpur Malaysia, 10-13th, November, 1997.
- M. Cho, H. Lim, et al. (1997). *Performance Issue: The load control of computational objects on the DPE-Based IN Architecture*. In Proceedings of the 4th International Conference on Intelligence in Service and Networks, 34-36, May 27-29, 1997.
- H. Lim, et al. (1996). *A Design of Centralized Call Model for Intelligent Network and B-ISDN Integration*. In Proceedings of the 4th International Conference on Intelligent Networks, Bordeaux, France, November 25-28, 1996.
- H. Lim, et al. (1996). *A Design of Call Model for Broadband Intelligent Network*. In Proceedings of the 7th International Networks Planning Symposium, 587-592, Sydney, Australia, November 24-29, 1996.
- H. Lim, et al. (1996). *A Study on Call Modeling for AIN/B-ISDN Integration*. In Proceedings of the International Conference on Parallel and Distributed Systems, 149-154, Tokyo, Japan, June 3-6, 1996.

- M. Cho and H. Lim, et al. (1996). *A Proposal of B-IN Physical Architecture and VOD Service Scenario using Unified Functional Architecture*. In Proceedings of the 2nd International Workshop on Multi-Dimensional Mobile Communications, 340-344, Seoul, Korea, May 18-20, 1996.
- K. Kim and H. Lim, et al. (1995). *IN Call Processing of the Service Switching Point*. In Proceedings of the 2nd Asia-Pacific Conference on Communications, vol. 1, Osaka, Japan, June 13-16, 1995.
- H. Lim, et al. (1995). *Implementation of INAP for AIN Service Switching Point*. In Proceedings of the International Symposium on Intelligent Networks and Broadband ISDN, 100-103, Beijing, China, April 10-12, 1995.
- K. Kim and H. Lim (1994). *Experience in Prototyping the Service Switching Point for AIN*. In Proceedings of the IEEE Singapore International Conference on Communication Systems, vol. 3, 1144-1148, Singapore, November 14-18, 1994.
- H. Lee and H. Lim et al. (1994). *Implementation of SSP Prototype for Advanced Intelligent Network*. In Proceedings of the 7th Korea-Japan Joint Conference on Communications, Networks and Switching Systems, 319-324, Daejeon, Korea, July 13-15, 1994.
- H. Lim et al. (1993). *Graphic User Interface for AIN SSP Prototype*. In Proceedings of the Asia-Pacific Symposium on Information and Telecommunications Technologies, Bangkok, Thailand, November 11-12, 1993.
- H. Lim and J. Kim (1991). *A Study on Event Calculus and Non-monotonic Reasoning: Preliminary Report*. In Proceedings of the Artificial Intelligence Conference of the Korea Information Science Society, 14-18, Seoul, Korea, 1991.

- Posters and Abstracts

- H. Lim, Y. Wang, and D. J. Felleman (2007). *Selectivity for Luminance and Chromatic Contrast-Defined Contours Distinguish V2 Thin, Thick, and Interstripes*. Program No. 229.3, Slide, San Diego: Society for Neuroscience, 2007. Online.
- H. Lim and Y. Choe (2006). *Facilitatory Synapses: the Role of Neural Delay Compensation*. Korean-American Bio-Medical Scientists Symposium, Poster Session, **Bioneer Award**, Texas Medical Center, Houston, Nov. 11, 2006.
- H. Lim and Y. Choe (2005). *Extrapolative Role of Facilitatory Synapses in the Compensation of Neural Delay*. Program No. 41.19, Washington, DC: Society for Neuroscience, 2005. Online.
- A. Jones, H. Lim and Y. Choe (2005). *Delay Compensation in Multi-Neuron Networks Using Facilitatory Neural Dynamics*. **Best Poster Award**, Undergraduate Summer Research Grants (USRG), Texas A&M University, August 8, 2005.
- H. Lim and Y. Choe (2005). *Facilitatory Neural Activity for Delay Compensation in the Nervous System*. Post-IJCNN2005 Workshop, Biologically-Inspired Models and Hardware for Human-like Intelligent Functions (BIMH 2005), Montreal, Canada, August 5, 2005.
- H. Lim and Y. Choe (2005). *Facilitatory Neural Dynamics for Delay Compensation in the Nervous System*. World Association of Modelers First Annual Biologically Accurate Modeling Meeting (WAM-BAMM 2005), San Antonio, TX, March 31 - April 2, 2005.

H. Lim and Y. Choe (2004). *Compensating for Sensory Delay Using Anticipatory Neural Activation in Evolutionary Neural Networks*. 2nd Industrial Affiliates Program (IAP) meeting, Texas A&M University, September 14, 2004.

- **Patents**

H. Lim and G. Choi. *Dialogue Handling Method for Intelligent Peripheral System*. Pending (US PTO).

H. Lim et al. *Fifteen patents (design and implementation of intelligent network application protocol and the call model for intelligent network and B-ISDN integration)*. Awarded in Korea.