Shohei Hidaka

School of Knowledge Science   Phone: (+81) 761-51-1717
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Ishikawa 923-1292, Japan.   http://www.jaist.ac.jp/~shhidaka/

Education

Ph.D. Informatics, Kyoto University, 2007
Thesis: "A Geometric Model of Categorization Space for Lexical Acquisition".

M.A. Informatics, Kyoto University, 2004
Thesis: "The Linguistic Category Influence on the Children's Bias of Word Acquisition".

B.A. Biology, Kyushu University, 2002
Thesis: "Mathematical Analysis of Geological Heterogeneity Effects on the Distribution of Species".

Research Experience

Assistant professor   2010–present
Japan Advanced Institute of Science and   Ishikawa, Japan
Technology
Mathematical modelling and psychological experiment of language development.

Visiting scholar   2012
Indiana University   Bloomington, IN
Mathematical modelling and psychological experiment of language development.

Post-Doctoral Research Fellow   2008–2010
National Institutes of Health   Indiana University
Mathematical modelling and psychological experiment of language development.

Research Fellow   2006–2008
Japanese Society for the Promotion of Science   Kyoto University
Mathematical modelling of language development and object recognition.

Teaching Experience

Lecturing a graduate level introductory class "Introduction to Cognitive Science" (   ) in the spring semester 2010 and 2011.

Hosting two graduate students from Indiana University visiting to Japan Advanced Institute of Sciences for their JSPS summer projects in 2011 and 2012.

Lectures for Cognitive Science Spring Seminars 2012 in Malta University.

Tutorial on statistical modeling in cognitive sciences (JCSS SIG-LAL):   &   (2012).
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Supervising five graduate students for their minor thesis in 2010, 2011.

Lecture series in JAIST Summer School 2011 ((2011) JAIST
2011   )

Supervising three graduate students (on the research projects on brain imaging), Spring, Summer, and Fall 2010 in Indiana University.

Research assistant (Introductory class of knowledge science), Spring 2010, 2011, and 2012.

Supervising four research assistants (on the research projects of cognitive development), Indiana University, Spring, Summer, Fall 2009, and Spring 2010.

Teaching Assistant, Advanced Informatics (Basic Neural Network Modeling), Kyoto University, Spring 2004.

Social contributions

Volunteer activity for non-typical developing children since May 2010 (Komatsu Municipal Hospital).

Membership

Membership in Japanese Cognitive Science Society (since April 2004).

Membership in Cognitive Science Society (since August 2006).

Membership in Association for Computing Machinery (2011).

Publication

Peer Reviewed Journal Articles

Yurovsky, D., Hidaka, S., and Wu, R. (in press) Quantitative Linking Hypotheses for Infant Eye Movements., *PLoS ONE.*

Hidaka, S. & Smith, L. B. (2011). Packing: A Geometric Analysis of Feature Selection and Fast-Mapping in Children ' s Category Formation., Cognitive System Research, 12 (1), 1-18.

Hidaka, S. & Smith, L. B. (2010). Acquisition of a Single Word to a Population of Words., Language Learning and Development., 6 (3), 206-222.

Maouene, J. , Hidaka, S. & Smith, L. B. (2008). Body parts and early-learned verbs., Cognitive Science, 32, 1200-1216.

,   , &   . (2006)
                                       .,   , 13, 484-487.

        &   . (2005).   .,   , 12, 235-251. (In English: Hidaka, S. & Saiki, S. (2005). A model study of infants ' novel word categorization., Cognitive Studies, 12, 235-251.)

Hidaka, S. (under review). A Sample-size-robust Estimation of Lexical Diversity.

Hidaka, S. (under review). Computational modeling of age of acquisition through word learning.

Peer Reviewed Conference Papers

Hidaka, S. and Saiki, J. A mechanism of ontological boundary shifting. In *The Twenty Sixth Annual Meeting of the Cognitive Science Society*, pp. 565–570, 2004.

Hidaka, S. & Saiki, J. A connectionist account of ontological boundary shifting. In N.R. et al. Pal, editor, *ICONIP 2004, Lecture Note in Computer Science 3316*, pp. 22–25, Berlin, 2004. Springer-Verlag.

Hidaka, S. & Saiki, J. Prototype-specific learning for children's vocabulary. In *Proceedings of The Fourth IEEE International Conference on Development and Learning*, p. 201, 2005.

Hidaka, S. & Saiki, J. Feature discovery in object individuation. In *Proceedings of The Fifth International Conference on Development and Learning*, 2006.

Maouene, J. , Hidaka, S. & Smith, L. B. , (2006). Children and adults rely on body parts for early-acquired verbs., In *Proceedings of The Fifth International Conference on Development and Learning*, 2006.

Hidaka, S. & Saiki, J. A solution to current limitations in the analysis of developmental data. In *The Fifteenth Biennial International Conference on Infant Studies*, 2006.

Hidaka, S., Saiki, J., & Smith, L. B. Semantic packing as a core mechanism of category coherence, fast mapping and basic level categories. In *Proceedings of The Twenty Eighth Annual Conference of Cognitive Society*, pp. 1500–1505, 2006.

Maouene, J. , Hidaka, S. & Smith, L. B. , (2006). Body parts and the first 100 verbs., In *Proceedings of The Twenty Eighth Annual Conference of Cognitive Society*, pp. 555–560, 2006.

Hidaka, S., Saiki, J., & Smith, L. B. Semantic packing: an account for category coherence. In *Proceedings of The Seventh International Conference on Cognitive Modelling*, pp. 130–135, 2006.

Hidaka, S. & Smith, L. B. Why natural categories are natural?: Categories packed on a curved surface. In *Proceedings of The Twenty Fourth Annual Conference of Japanese Cognitive Science Society*, pp. 16–21, 2007. (In Japanese)

Maouene, J., Hidaka, S., & Smith, L. B. Body-Part Categories of Early-Learned Verbs: Different Granularities at Different Points in Development In *Proceedings of The Seventh International Conference on Development and Learning*, 2008.

Hidaka, S. & Smith, L. B. How Features Create Knowledge of Kinds. In *Proceedings of The Thirtyth Annual Meeting of Cognitive Science Society*, pp. 1029–1035, 2008.

Hidaka, S. & Smith, L. B. Kind-Specific Novel Word Generalization on Natural Objects In *Proceedings of The Twenty Fifth Annual Conference of Japanese Cognitive Science Society*, 2008. (In Japanese)

Hidaka, S., Maouene, J. & Smith, L. B. Different Word Classes are Learned in Different Ways: Evidence from Vocabulary Growth. In *Proceedings of International Cognitive Linguistics Conference 11*, 2009.

Hidaka, S. (2009). Different Classes of Words are Learned in Different Ways. In *Proceedings of The Thirty First Annual Meeting of Cognitive Science Society*, oral presentation.

Takahashi, K., Hidaka, S & Watanabe, K. (2010). Decoding Subjective Simultaneity from Neuromagnetic Signals, 17th International Conference on Biomagnetism.

Yurovsky, D., Hidaka, S., Yu, C., & Smith, L. B. (2010). A Generative Model of Eye, Movements in Cross-Situational Learning. *XVIIth Biennial International Conference on Infant Studies*, Baltimore, Maryland, March 10-14, 2010.

Yurovsky, D., Hidaka, S., Yu, C., & Smith, L. B. (2010) Liking Learning to Looking: Habituation and Association in Infant Statistical Language Learning, In *Proceedings of The Thirty Second Annual Meeting of Cognitive Science Society*, 1589-1594.

Hidaka, S., & Yu, C. (2010) Analyzing Multimodal Time Series as Dynamical Systems, 12th International Conference on Multimodal Interfaces and 7th Workshop on Machine Learning for Multimodal Interaction.

Hidaka, S., & Yu, C. (2010). Spatio-Temporal Symbolization of Multidimensional Time Series, International Workshop on Spatial and Spatiotemporal Data Mining.

Yu, C., Smith, T.G., Hidaka, S., Scheutz, M., Smith, L.B. A Data-Driven Paradigm to Understand Multimodal Communication in Human-Human and Human-Robot Interaction . In P.R. Cohen, N.M. Adams, M.R. Berthold (Eds.) Advances in Intelligent Data Analysis IX,LNCS 6065 (pp. 232-244). Berlin/Heidelberg: Springer Verlag.

Suzuki, Y. & Hidaka., S. (2011). Estimating similarity judgment processes based on neural activities measured by near-infrared spectroscopy (NIRS). (Also published in the book "Advances in Cognitive Neurodynamics (III)")

Hidaka S and Yu C (2011). Informational Coupling in Social Interaction as a Goodness of Communication. Front. Comput. Neurosci. Conference Abstract: IEEE ICDL-EPIROB 2011.

Hannagan T, Wu R, Hidaka S and Yu C (2011). A Computational Model for Cued Infant Learning. Front. Comput. Neurosci. Conference Abstract: IEEE ICDL-EPIROB 2011.

Hidaka, S. (2012) Identifying Kinematic Cues for Action Style Recognition. In *Proceedings of The Thirty Fourth Annual Meeting of Cognitive Science Society*, 1679-1684.

Yurovsky, D., Hidaka, S., & Wu, R. (2012) Quantitative Linking Hypotheses for Infant Eye Movements, In *Proceedings of The Thirty Fourth Annual Meeting of Cognitive Science Society*, 1203-1208.

Invited Talks

Hidaka, S. (2012). Word Learning In Social Interaction. In Cognitive Science Spring Seminars (University of Malta, March, 26th, 2012).

Hidaka, S. (2012). Decoding emotional contexts in bodily actions., Lecture for Master in the Science of Performative Creativity (University of Malta, March, 29th, 2012).

Shohei Hidaka (2012). Characterizing Attention and Learning from Infant Eye Movements., In the workshop "Gaze Bias Learning II", Linking neuroscience, computational modeling, and cognitivedevelopment., Tamagawa University.

          &   (2012).   ,
              46   .

       (2011).   ,   32
     , 2011   12   22-23   ,   .

Hidaka, S. (2012). Toward a computational model of creativity: Novel hypothesis generation from structural knowledge. Seventh International Conference on Knowledge, Information and Creativity Support Systems.

Book Chapters

Smith, L. B. Maouene, J. & Hidaka, S. *The Body and Children's Word Learning*, pp. 168–192. Oxford University Press, Oxford, 2007.

Research Grants

KAKENHI Grant-in-Aid for Scientific Research B 23300099 (2011-2013).

JAIST Grant for Advanced research base (2011-2012).

KAKENHI Grant-in-Aid for Scientific Research Activity Start-up 50582912 (2011-2012).

Artificial Intelligence Research Promotion Foundation 22AI 161-9 (2011-2012).

Honors and Awards

Travel Grant for International Conference, Kyoto University Foundation, 2006.

Travel Grant for Short term International Research, Kyoto University, 2006.

Travel Grant for Short term International Research, Kyoto University, 2005.

Travel Grant from the Japan Cognitive Science Society, 2009 (Reported in Cognitive Studies Vol. 16 (2009) , No. 4 pp.532-540).

Research grand for young scientists, Kyoto University, 2005.

Outstanding Paper Award, 22th Annual Conference of the Japanese Cognive Science Society, 2005.

British Psychological Society International Collaboration Award (For collaborative work with Ratchel Wu and D. Yurovsky, British Psychological Society, 2010).

Computer Skills

Expert: Matlab

Intermediate: R, Perl, LaTeX, HTML, ActionScript, C

Basic: C++ , Ruby, SQL, Mathematica, Linux, SPSS

Computatioinal Modeling Skill

Datamining/Machine Learning techniques for a large scale cognitive and psychological database. Applied Statistics, Complex Network, Neural Networks, Corpus Linguistics, Bayesian Modelling, and Nonliear Time Series Analysis.

Languages

Japanese (mother tongue)

English (good knowledge)

Other Skills

The game of Go (Baduk in Korean, Weiqi in Chinese): Amateur expert level (6 dan in Japanese ranking),

Shogi (Japanese Chess): Amateur intermediate grade (1 dan in Japanese ranking).

Judo 1 dan (black belt).