Sanghack Lee, Ph.D. **Post-Doctoral Research Associate**

CONTACT INFORMATION

Department of Computer Science
Purdue University
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RESEARCH INTERESTS

Sequential Decision Making Problems from the Aspect of Causality, Causal Inference and Causal Discovery in Propositional or Relational Setting, Machine Learning in General, Probabilistic Graphical Models, Statistical Learning Theory, Natural Language Processing, Social Network Analysis

EDUCATION

The Pennsylvania State University, University Park, PA, United States

PhD candidate, College of Information Sciences and Technology **Spring 2018**

Iowa State University, Ames, IA, United States

PhD student (transferred), Computer Science **July 2013**

Sogang University, Seoul, South Korea

MS., Computer Science and Engineering **February 2006**

BE., Computer Science and Engineering, *Cum Laude* **February 2004**

PUBLICATIONS

Sanghack Lee and Elias Bareinboim (2019). Structural Causal Bandits with Non-manipulable Variables. In *Proceedings of Thirty-third AAAI Conference on Artificial Intelligence (AAAI 2019)* (forthcoming)

Sanghack Lee and Elias Bareinboim (2018). Structural Causal Bandits: Where to Intervene?. In Advances in Neural Information Processing Systems 31 (NIPS 2018) (forthcoming)

Sanghack Lee and Vasant Honavar (2017). Self-Discrepancy Conditional Independence Test. In *Proceedings of Thirty-third Conference on Uncertainty in Artificial Intelligence (UAI 2017)*

Sanghack Lee and Vasant Honavar (2017). A Kernel Conditional Independence Test for Relational Data. In *Proceedings of Thirty-third Conference on Uncertainty in Artificial Intelligence (UAI 2017)*

Sanghack Lee and Vasant Honavar (2016). A Characterization of Markov Equivalence Classes of Relational Causal Models under Path Semantics. In *Proceedings of Thirty-second Conference on Uncertainty in Artificial Intelligence (UAI 2016)*. 387–396

Kyungsik Han, **Sanghack Lee**, Jin Yea Jang, Yong Jung, and Dongwon Lee (2016). "Teens are from Mars, Adults are from Venus": Analyzing and Predicting Age Groups with Behavioral Characteristics in Instagram. In *Proceedings of Eighth International ACM Web Science Conference 2016 (WebSci 2016).* 35–44

Sanghack Lee and Vasant Honavar (2016). On Learning Causal Models for Relational Data. In *Proceedings of Thirtieth Conference on Artificial Intelligence (AAAI 2016)*. 3263–3270

Sanghack Lee and Vasant Honavar (2015). Lifted Representation of Relational Causal Models Revisited: Implications for Reasoning and Structure Learning. In *Proceedings of the UAI 2015 Workshop on Advances in Causal Inference co-located with the 31st Conference on Uncertainty in Artificial Intelligence (UAI 2015).* 56–65

Elias Bareinboim*, **Sanghack Lee***[1], Vasant Honavar, and Judea Pearl (2013). Transportability from Multiple Environments with Limited Experiments. In Advances in Neural Information Processing 26 (NIPS Proceedings), 136–144

Sanghack Lee and Vasant Honavar (2013). *m*-Transportability: Transportability of a Causal Effect from Multiple Environments. In *Proceedings of the Twenty-seventh Conference on Artificial Intelligence (AAAI 2013)*. 583–590

[1] Both authors contributed equally.

Sanghack Lee and Vasant Honavar (2013). Causal Transportability of Experiments on Controllable Subsets of Variables: z-Transportability. In *Proceedings of the Twenty-ninth Conference on Uncertainty in Artificial Intelligence (UAI 2013)*. 361–370

Harris Lin*, **Sanghack Lee***, Ngot Bui*[2] and Vasant Honavar (2013). Learning Classifiers from Distributional Data. In IEEE Second International Congress on Big Data. 302–309

Pre-Ph.D.

Sanghack Lee, Jihoon Yang and Sungyong Park (2006). A New Polynomial Time Algorithm for Bayesian Network Structure Learning. Advanced Data Mining and Applications, Second International Conference (ADMA 2006): Springer, Lecture Notes in Computer Science, Vol. 4093. 501-508.

Sanghack Lee, Jihoon Yang and Sung-Yong Park (2004). Discovery of Hidden Similarity on Collaborative Filtering to Overcome Sparsity Problem. Discovery Science 2004 (DS 2004): Springer, Lecture Notes in Computer Science, Vol. 3245 396-402.

PROFESSIONAL SERVICE

ACM CHI'16 (Reviewer), Causality Workshop at UAI 2017 (Reviewer), ACM TIST Special Issue on Causal Discovery and Inference 2014 (Reviewer)

PROFESSIONAL EXPERIENCE

Senior Engineer at **Diquest, inc.**, Seoul, South Korea **February 2006 to June 2009**

Development and maintenance of an enterprise search engine (server and client programming)

RESEARCH EXPERIENCE

Post-doctoral Research Associate, Purdue University **2018 – present**

Research Assistant, Pennsylvania State University **2015 – 2018**

Developed models and algorithms for representing causal knowledge in a relational domain

Research Assistant, Pennsylvania State University **2013 – 2014**

Developed algorithms for inference of causal effects given observational and experimental distributions

Research Assistant, Iowa State University **2011 – 2013**

Studied eliciting causal effects given observational and experimental distributions

Research Assistant, Sogang University **2005**

Developed an algorithm for feature subset selection, which is a part of research project for building a system software imitating ecosystem.

TEACHING EXPERIENCE

Graduate Teaching Assistant, Pennsylvania State University

Discrete Mathematics, Principles of Artificial Intelligence (IST 597F)

Graduate Teaching Assistant, Iowa State University

Design and Analysis of Algorithms, Principles of Artificial Intelligence (ComS 572), Machine Learning (ComS 573), Object-Oriented Analysis and Design, Design and Analysis of Algorithms (ComS 511)

Graduate Teaching Assistant, Sogang University

Java Language Programming, Personal Computer Laboratory I, Discrete Structures

REFERENCES

available on request

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[2] Authors (*) contributed equally.