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JANG SUN LEE

(aka. Karl Stratos)

- Employment** *Toyota Technological Institute at Chicago, Chicago, IL (June 2017—present)*
Research Assistant Professor
Bloomberg L.P., New York, NY (August 2016—May 2017)
Senior Research Scientist
Columbia University, New York, NY (January 2017—May 2017)
Adjunct Assistant Professor
- Education** *Columbia University, New York, NY (September 2011—June 2016)*
Ph.D. in Computer Science (Advisor: [Michael Collins](#))
Thesis: [Spectral Methods for Natural Language Processing](#)
University of Rochester, Rochester, NY (August 2008—May 2011)
Bachelor of Science in Computer Science
Bachelor of Arts in Mathematics
Minor in History
- Research Areas** Natural Language Processing, Machine Learning (code at [GitHub](#))
- Funding** [Bloomberg Data Science Research Grant](#) (with Kevin Gimpel), 2018
NVIDIA GPU Grant, 2017
- Preprints** David McAllester and Karl Stratos. [Formal Limitations on the Measurement of Mutual Information](#). On arXiv
- Publications** Karl Stratos. [Mutual Information Maximization for Simple and Accurate Part-Of-Speech Induction](#). In Proceedings of NAACL 2019 (to appear)
Daniel Edmiston and Karl Stratos. [Compositional Morpheme Embeddings with Affixes as Functions and Stems as Arguments](#). In Proceedings of ACL 2018, Workshop on Relevance of Linguistic Structure in Neural NLP
Karl Stratos. [A Sub-Character Architecture for Korean Language Processing](#). In Proceedings of EMNLP 2017
Karl Stratos. [Entity Identification as Multitasking](#). In Proceedings of EMNLP 2017, Workshop on Structured Prediction for NLP

- Karl Stratos. [Reconstruction of Word Embeddings from Sub-Word Parameters](#). In Proceedings of EMNLP 2017, Workshop on Subword and Character Level Models in NLP
- Heejin Choi and Karl Stratos. [Handling Large Structural Costs in Neural Networks with Slack Rescaling](#). In Proceedings of ICML 2017, Workshop on Deep Structured Prediction
- Young-Bum Kim, Karl Stratos, and Dongchan Kim. [Adversarial Adaptation of Synthetic or Stale Data](#). In Proceedings of ACL 2017
- Young-Bum Kim, Karl Stratos, and Dongchan Kim. [Domain Attention with an Ensemble of Experts](#). In Proceedings of ACL 2017
- Young-Bum Kim, Karl Stratos, and Ruhi Sarikaya. [Frustratingly Easy Neural Domain Adaptation](#). In Proceedings of COLING 2016
- Young-Bum Kim, Karl Stratos, and Ruhi Sarikaya. [Domainless Adaptation by Constrained Decoding on a Schema Lattice](#). In Proceedings of COLING 2016
- Karl Stratos, Michael Collins, and Daniel Hsu. [Unsupervised Part-Of-Speech Tagging with Anchor Hidden Markov Models](#). In TACL 2016
- Young-Bum Kim, Karl Stratos, and Ruhi Sarikaya. [Scalable Semi-Supervised Query Classification Using Matrix Sketching](#). In Proceedings of ACL 2016
- Karl Stratos, Michael Collins, and Daniel Hsu. [Model-based Word Embeddings from Decompositions of Count Matrices](#). In Proceedings of ACL 2015
- Young-Bum Kim, Karl Stratos, Ruhi Sarikaya, and Minwoo Jeong. [New Transfer Learning Techniques for Disparate Label Sets](#). In Proceedings of ACL 2015
- Young-Bum Kim, Karl Stratos, and Ruhi Sarikaya. [Pre-training of Hidden-Unit CRFs](#). In Proceedings of ACL 2015
- Young-Bum Kim, Karl Stratos, Xiaohu Liu, and Ruhi Sarikaya. [Compact Lexicon Selection with Spectral Methods](#). In Proceedings of ACL 2015
- Karl Stratos and Michael Collins. [Simple Semi-Supervised POS Tagging](#). In Proceedings of NAACL 2015 Workshop on Vector Space Modeling for NLP
- Young-Bum Kim, Minwoo Jeong, Karl Stratos, and Ruhi Sarikaya. [Weakly Supervised Slot Tagging with Partially Labeled Sequences from Web Search Click Logs](#). In Proceedings of NAACL 2015
- YoungHoon Jung, Karl Stratos, and Luca P. Carloni. [LN-Annotate: An Alternative Approach to Information Extraction from Emails using Locally-Customized Named-Entity Recognition](#). In Proceedings of WWW 2015
- Karl Stratos, Do-kyum Kim, Michael Collins, and Daniel Hsu. [A Spectral Algorithm for Learning Class-Based n-gram Models of Natural Language](#). In Proceedings of UAI 2014
- Shay B. Cohen, Karl Stratos, Michael Collins, Dean Foster and Lyle Ungar. [Spectral Learning of Latent-Variable PCFGs: Algorithms and Sample Complexity](#). In JMLR 2014

- Karl Stratos, Alexander M. Rush, Shay B. Cohen, and Michael Collins. [Spectral Learning of Refinement HMMs](#). In Proceedings of CoNLL 2013
- Shay B. Cohen, Karl Stratos, Michael Collins, Dean Foster and Lyle Ungar. [Experiments with Spectral Learning of Latent-Variable PCFGs](#). In Proceedings of NAACL 2013
- Shay B. Cohen, Karl Stratos, Michael Collins, Dean Foster and Lyle Ungar. [Spectral Learning of Latent-Variable PCFGs](#). In Proceedings of ACL 2012
- Margaret Mitchell, Xufeng Han, Jesse Dodge, Alyssa Mensch, Amit Goyal, Alex Berg, Kota Yamaguchi, Tamara Berg, Karl Stratos, and Hal Daumé III. [Midge: Generating image descriptions from computer vision detections](#). In Proceedings of EACL 2012
- Alexander C. Berg, Tamara L. Berg, Hal Daumé III, Jesse Dodge, Amit Goyal, Xufeng Han, Alyssa Mensch, Margaret Mitchell, Aneesh Sood, Karl Stratos, and Kota Yamaguchi. [Understanding and Predicting Importance in Images](#). In Proceedings of CVPR 2012
- Karl Stratos, Lenhart K. Schubert, and Jonathan Gordon. [Episodic Logic: Natural Logic + Reasoning](#). In Proceedings of KEOD 2011
- Lenhart Schubert, Jonathan Gordon, Karl Stratos, and Adina Rubinoﬀ. [Towards Adequate Knowledge and Natural Inference](#). In Proceedings of AAAI Fall Symposium on Advances in Cognitive Systems 2011

Teaching

- 2018 Instructor, [Spectral Techniques for Machine Learning](#), Toyota Technological Institute at Chicago, Fall
- 2018 Co-Instructor (with Suriya Gunasekar), [Introduction to Machine Learning Summer School](#), Toyota Technological Institute at Chicago, Summer
- 2017 Instructor, Natural Language Processing, Columbia University, Spring
- 2013 Teaching Assistant, Advanced Machine Learning, Daniel Hsu, Columbia University, Fall
- 2012 Teaching Assistant, Machine Learning for Natural Language Processing, Michael Collins, Columbia University, Spring

Professional Activities

Conference/Journal Reviewing:

- AAAI: 2018, 2019
- ACL: 2014, 2015, 2016, 2017, 2018, 2019
- AISTATS: 2018, 2019
- COLING: 2017, 2018
- CONLL: 2018
- EACL: 2017

EMNLP: 2015, 2016, 2017
ICLR: 2018, 2019
ICML: 2014, 2015, 2016, 2017, 2018, 2019
IJCNLP: 2017
JMLR: 2018
NAACL: 2015, 2016, 2018
NIPS: 2014, 2015, 2017, 2018, 2019

Organizing Committee, *Midwest Speech and Language Days*, 2019

Area Chair (Machine Learning), EMNLP, 2018

Co-Organizer, [Introduction to Machine Learning Summer School](#), Toyota Technological Institute at Chicago, Summer

Invited Speaker, *13th Joint CS Seminar at Toyota Technological Institute*, 2017

Invited Speaker, *CSE Seminar Series, University of Notre Dame*, 2017

Invited Speaker, *COLING Young Researchers Symposium on Natural Language Processing*, 2016

Program Committee, *ACL Workshop on Relevance of Linguistic Structure in Neural Architectures for NLP*, 2018

Program Committee, *ACL Workshop on Representation Learning for NLP*, {2016, 2017}

Program Committee, *ACL Workshop on Evaluating Vector Space Representations for NLP*, {2016, 2017}

Program Committee, *NAACL Workshop on Vector Space Modeling for NLP*, 2015

NAACL 2013 Tutorial, *Spectral Learning Algorithms for Natural Language Processing* with Shay Cohen, Michael Collins, Dean Foster, and Lyle Ungar

Program Committee, *Mid-Atlantic Student Colloquium on Speech, Language and Learning*, 2012

Academic Internships

2014 Research Intern, *Google Inc.*, June–August. Worked with Slav Petrov and Emily Pitler.

2013 Research Intern, *Microsoft*, June–August. Worked with Sham Kakade and T. J. Hazen.

2011 Summer Workshop, *Johns Hopkins University Center for Language and Speech Processing*, July–August. Worked with Alexander and Tamara Berg.

2010 Research Intern, *University of Rochester*, June–August. Worked with Lenhart Schubert.