

Dohyung Park

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| CONTACT INFORMATION | Electrical & Computer Engineering The University of Texas at Austin 1616 Guadalupe, UTA 7.518, Austin, TX 78701 | <i>E-mail:</i> dhpark@utexas.edu <i>Web:</i> http://dhpark22.github.io/ |
| RESEARCH INTERESTS | My research interests are primarily in large-scale optimization for machine learning problems. I am also interested in online or distributed algorithms in this area. | |
| EDUCATION | The University of Texas at Austin Ph.D., Electrical & Computer Engineering • Advisors : Prof. Constantine Caramanis and Prof. Sujay Sanghavi | 2011 - 2016 |
| | Korea Advanced Institute of Science and Technology M.S., Electrical Engineering B.S., Electrical Engineering (Magna Cum Laude) • Minor in Computer Science | |
| RESEARCH EXPERIENCE | Facebook, Inc. <i>Semantic embeddings of topics in the word vector space</i> <ul style="list-style-type: none">- Designed an algorithm based on Word2Vec which embeds topics into the word vector space- Implemented a pipeline which constructs training text corpora using Python, Java, and Hive/SQL, and developed the algorithm and its unit tester in C/C++. The University of Texas at Austin <i>Collaborative ranking from pairwise preferences</i> <ul style="list-style-type: none">- Proposed algorithms for ranking multiple items for each of multiple users from given pairwise preferences.- Implemented parallel algorithms on a multi-core machine. <i>Learning unions of subspaces (a.k.a. Subspace clustering)</i> <ul style="list-style-type: none">- Developed algorithms to recover unions of subspaces from unlabeled points.- Derived statistical guarantee for exact clustering with conditions weaker than state-of-the-art results.- Showed competitive practical performance on motion segmentation with much lower computational cost. Samsung Advanced Institute of Technology <i>Mobile indoor localization systems</i> <ul style="list-style-type: none">- Designed algorithms to estimate indoor locations with limited infrastructure.- Developed a testbed to demonstrate the localization algorithms. | |
| HONORS & AWARDS | Bronze medal, Korean Olympiad in Informatics Bronze medal, Korean Science Olympiad KAIST Governmental Fellowship | |

PUBLICATIONS

- [1] **Dohyung Park**, Anastasios Kyrillidis, Constantine Caramanis, and Sujay Sanghavi, “Finding Low-rank Solutions to Matrix Problems, Efficiently and Provably,” ArXiv preprint (1606.03168)
- [2] **Dohyung Park**, Anastasios Kyrillidis, Srinadh Bhojanapalli, Constantine Caramanis, and Sujay Sanghavi, “Provable Non-convex Projected Gradient Descent for A Class of Constrained Matrix Optimization Problems,” submitted to NIPS, (ArXiv preprint 1606.01316)
- [3] Xinyang Yi, **Dohyung Park**, Yudong Chen, and Constantine Caramanis, “Fast Algorithms for Robust PCA via Gradient Descent,” submitted to NIPS (ArXiv preprint 1605.07784)
- [4] **Dohyung Park**, Joe Neeman, Jin Zhang, Sujay Sanghavi, and Inderjit S. Dhillon, “Preference Completion: Large-scale Collaborative Ranking from Pair-wise Comparison,” in *Proc. International Conference on Machine Learning(ICML)*, 2015.
- [5] **Dohyung Park**, Constantine Caramanis, and Sujay Sanghavi, “Greedy sub-space clustering,” in *Proc. Neural Information Processing Systems(NIPS)*, 2014.
- [6] Won-Yong Shin, **Dohyung Park**, and Bang Chul Jung, “Can one achieve multiuser diversity in uplink multi-cell networks?,” *IEEE Transactions on Communications*, Vol. 60, No. 12, pp. 3535-3540, Dec. 2012.
- [7] Bang Chul Jung, **Dohyung Park**, and Won-Yong Shin, “Opportunistic interference mitigation achieves optimal degrees-of-freedom in wireless multi-cell uplink networks,” *IEEE Transactions on Communications*, Vol. 60, No. 7, pp. 1935-1944, July 2012.
- [8] **Dohyung Park**, Joonsung Kang, and Eung Sun Kim, “Ad hoc indoor peer-to-peer tracking using relative location estimation,” in *Proc. International Conference on Indoor Positioning and Indoor Navigation(IPIN)*, ETH Zurich, Switzerland, Sept. 2010.
- [9] Bang Chul Jung, **Dohyung Park**, and Won-Yong Shin, “A study on the optimal degrees-of-freedom of cellular networks: opportunistic interference mitigation,” in *Proc. Asilomar Conference on Signals, Systems and Computers*, Nov. 2010.
- [10] Namyoon Lee, **Dohyung Park**, and Young-Doo Kim, “Degrees of freedom on the K-user MIMO interference channel with constant channel coefficients for down-link communications,” in *Proc. IEEE Global Communications Conference(GLOBECOM)*, 2009.
- [11] **Dohyung Park** and Sae-Young Chung, “Performance-complexity tradeoffs of rateless codes,” in *Proc. IEEE International Symposium on Information Theory(ISIT)*, Toronto, Canada, July 2008.

COURSES

Math/OR/Stat - Real Analysis, Theory of Probability, Functional Analysis, Numerical Linear Algebra, Linear Programming, Convex Optimization, Statistical Modelling

EECS - Probability and Stochastic Processes, Advanced Probability, Randomized Algorithms, Machine Learning, Large-scale Learning, Sparsity/Structure/Algorithms,

Scalable Machine Learning, Information Theory, Coding Theory, Communication Systems.

PATENTS

[1] Eung Sun Kim, **Dohyung Park**, Yong Kim, “Method of calculating accuracy of measuring location, and method and apparatus for measuring location of terminal using accuracy of measuring location,” US2013/0080048A1, Mar. 2013.

[2] Joon Seong Kang, Eung Sun Kim, and **Dohyung Park**, “Method and apparatus for estimating angle of arrival,” US2011/0199263A1, Aug. 2011

[3] **Dohyung Park**, Eung Sun Kim, and Joon Seong Kang, “Apparatus and method for estimating relative location,” US2011/0270519A1, Nov. 2011.

SKILLS

- Programming Languages: C/C++, Java, Python, R, MATLAB, SQL/Hive.
- Operating Systems: Windows, Mac OS, Unix/Linux