

# Kangwook Lee, PhD

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Updated on 6/21/2021

- Personal webpage: <http://kangwooklee.com>
- Google Scholar: <https://scholar.google.com/citations?user=sCEL8r-n5VEC>

## ACADEMIC APPOINTMENTS

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- University of Wisconsin–Madison** *Aug. 2019 – present*  
**Dept. of Electrical & Computer Engineering**  
**Dept. of Computer Sciences (by courtesy)**  
Assistant Professor
- KAIST (Korea Advanced Institute of Science and Technology)** *Oct. 2018 – June 2019*  
Research Assistant Professor  
Mentor: Prof. Changho Suh  
*In lieu of military service (June 2016 – June 2019)*
- KAIST (Korea Advanced Institute of Science and Technology)** *June 2016 – Sept. 2018*  
Postdoctoral Fellow  
Mentor: Prof. Changho Suh  
*In lieu of military service (June 2016 – June 2019)*

## EDUCATION

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- University of California, Berkeley** *May 2016*  
Ph.D. in Electrical Engineering and Computer Science  
Thesis : Speeding Up Distributed Storage and Computing Systems using Codes  
Advisor : Prof. Kannan Ramchandran
- University of California, Berkeley** *Dec. 2012*  
M.S. in Electrical Engineering and Computer Science  
Thesis : An Optimized Distributed Video-on-Demand Streaming System: Theory and Design  
Advisor : Prof. Kannan Ramchandran
- KAIST (Korea Advanced Institute of Science and Technology)** *May 2010*  
B.S. in Electrical Engineering  
Advisor: Prof. Sae-Young Chung and Prof. Yung Yi

## RESEARCH INTERESTS

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Trustworthy and scalable machine learning. Information & coding theory.

## AWARDS AND HONORS (SELECTED)

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- **IEEE Joint Communications Society/Information Theory Society Paper Award**, 2020
- Brain Korea 21 Research Assistant Professor Fellowship, 2018 - 2019.
- GCORE Post-doctoral Fellowship, 2017 - 2019.
- Brain Korea 21 Post-doctoral Fellowship, 2016 - 2018.
- **The Outstanding Graduate Student Instructor Award**, UC Berkeley, 2016.
- **KFAS PhD Fellowship (Full funding for five years)**, 2010 - 2015.
- Best Paper Award Runner-up, IEEE MASCOTS 2013.
- **Korea Talent Award (Presidential Award)**, Korea Foundation for Advancement of Science & Creativity (KOFAC), 2009.
- Dongbu Scholarship (Full funding), Dongbu Cultural Foundation, 2008-2010.
- National Scholarship for Engineering and Applied Science students (Full funding), Korea Student Aid Foundation, 2006-2008.

## PUBLICATION

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### Peer-Reviewed Journals

- MVAP H. Kim\*, **K. Lee\*** and C. Suh, “Predicting Vehicle Collisions using Data Collected from Video Games”, *Springer Machine Vision and Applications*, to appear, 2021.
- T-SP **K. Lee**, K. Chandrasekher, R. Pedarsani and K. Ramchandran, “SAFFRON: Sparse-Graph Code Framework for Group Testing”, *IEEE Transactions on Signal Processing*, vol. 67, no. 17, pp. 4649-4664, 2019.
- T-IT K. Ahn\*, **K. Lee\*** and C. Suh, “Community Recovery in Hypergraphs”, *IEEE Transactions on Information Theory*, 2019.
- JSTSP K. Ahn, **K. Lee** and C. Suh, “Hypergraph Spectral Clustering in the Weighted Stochastic Block Model”, in *IEEE Journal of Selected Topics in Signal Processing*, vol. 12, no. 5, pp. 959-974, Oct. 2018.
- T-IT **K. Lee**, M. Lam, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, “Speeding Up Distributed Machine Learning using Codes”, in *IEEE Transactions on Information Theory*, vol. 64, no. 3, pp. 1-16, Mar. 2018.
- ▷ **2020 The Joint Communications Society/Information Theory Society Paper Award**
- T-IT **K. Lee**, N. Shah, L. Huang and K. Ramchandran, “The MDS Queue: Analysing the Latency Performance of Erasure Codes”, in *IEEE Transactions on Information Theory*, vol. 63, no. 5, pp. 2822-2842, May 2017.
- ToN **K. Lee**, R. Pedarsani and K. Ramchandran, “On Scheduling Redundant Requests with Cancellation Overheads”, in *IEEE/ACM Transactions on Networking*, vol. 25, no. 2, pp. 1279-1290, Apr. 2017.
- T-IT R. Pedarsani, D. Yin, **K. Lee** and K. Ramchandran, “PhaseCode: Fast and Efficient Compressive Phase Retrieval based on Sparse-Graph Codes”, in *IEEE Transactions on Information Theory*, vol. 63, no. 6, pp. 3663-3691, June 2017.
- TComm N. Shah, **K. Lee** and K. Ramchandran, “When Do Redundant Requests Reduce Latency?”, in *IEEE Transactions on Communications*, vol. 64, no. 2, pp. 715-722, Feb. 2016.

### Peer-reviewed ML Conferences

- ICML’21 T. Dinh and **K. Lee**, “Coded-InvNet for Resilient Prediction Serving Systems”, *The Thirty-eighth International Conference on Machine Learning (ICML’21)*, **Long Oral Presentation (166/5513=3.0%)**, Virtual Only, July, 2021.
- ICML’21 C. Jo and **K. Lee**, “Discrete-Valued Latent Preference Matrix Estimation with Graph Side Information”, *The Thirty-eighth International Conference on Machine Learning (ICML’21)*, Virtual Only, July, 2021.
- MLSys’21 S. Agarwal, H. Wang, **K. Lee**, S. Venkataraman, and D. Papailiopoulos, “Accordion: Adaptive Gradient Communication via Critical Learning Regime Identification”, *Fourth Conference on Machine Learning and Systems (MLSys’21)*, Virtual Only, April, 2021.
- ICLR’21 Y. Roh, **K. Lee**, S. Whang, and C. Suh, “FairBatch: Batch Selection for Model Fairness”, *The Ninth International Conference on Learning Representations (ICLR’21)*, Virtual Only, May, 2021.
- NeurIPS’21 H. Wang, K. Sreenivasan, S. Rajput, H. Vishwakarma, S. Agarwal, J. Sohn, **K. Lee**, and D. Papailiopoulos, “Attack of the Tails: Yes, You Really Can Backdoor Federated Learning”, *The Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS’20)*, Virtual Only, Dec., 2020.
- ECML’20 **K. Lee**, C. Suh, and K. Ramchandran, “Reprogramming GANs via Input Noise Design”, *The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD’20)*, Ghent, Belgium, Sept., 2020.
- ICML’20 Y. Roh, **K. Lee**, S. Whang, and C. Suh, “FR-Train: A Mutual Information-based Approach to Fair and Robust Training”, *The Thirty-seventh International Conference on Machine Learning (ICML’20)*, July, 2020.
- AAAI’19 H. Kim\*, **K. Lee\***, G. Hwang and C. Suh, “Crash to Not Crash: Learn to Identify Dangerous Vehicles using a Simulator”, *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI’19)*, **Oral Presentation**, Honolulu, HI, Jan. 2019.
- NeurIPS’18 K. Ahn, **K. Lee**, H. Cha and C. Suh, “Binary Rating Estimation with Graph Side Information”, *The Thirty-second Conference on Neural Information Processing Systems (NeurIPS’18)*, Montréal, Canada, Dec. 2018.
- ICLR’18 **K. Lee\***, H. Kim\* and C. Suh, “Simulated+Unsupervised Learning With Adaptive Data Generation and Bidirectional Mappings”, *The Sixth International Conference on Learning Representations (ICLR’18)*, Vancouver, BC, Canada, Apr. 2018.
- SysML’18 **K. Lee**, K. Lee, H. Kim, C. Suh and K. Ramchandran, “SGD on Random Mixtures: Private Machine Learning under Data-breach Threats”, *SysML 2018*, Stanford, CA, Feb. 2018.
- SysML’18 J. Chung, **K. Lee**, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, “UberShuffle: Communication-efficient Data Shuffling for SGD via Coding Theory”, *SysML 2018*, Stanford, CA, Feb. 2018.

### Peer-reviewed ML Workshops

- ICMLW'20 J. Sohn, **K. Lee**, J. Moon, and D. Papailiopoulos, "GAN-mixup: Augmenting Across Data Manifolds for Improved Robustness", *The Thirty-seventh International Conference on Machine Learning (ICML'20) Workshop on Uncertainty & Robustness in Deep Learning 2020*, July 2020.
- NeurIPSW'19 D. Kim, **K. Lee** and C. Suh, "Improving Model Robustness via Automatically Incorporating Self-supervision Tasks", *The Thirty-third Conference on Neural Information Processing Systems (NeurIPSW'19) Workshop on Meta-Learning (MetaLearn 2019)*, Vancouver, BC, Canada, Dec. 2019.
- ICLRW'18 **K. Lee**, K. Lee, H. Kim, C. Suh and K. Ramchandran, "SGD on Random Mixtures: Private Machine Learning under Data-breach Threats", *The Sixth International Conference on Learning Representations (ICLR'18) Workshop*, Vancouver, BC, Canada, Apr. 2018.
- NeurIPSW'17 J. Chung, **K. Lee**, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, "UberShuffle", *The Thirty-first Conference on Neural Information Processing Systems (NeurIPS'17) Workshop on Machine Learning Systems*, Los Angeles, CA, Dec. 2017.
- ICMLW'17 **K. Lee**<sup>\*</sup>, H. Kim<sup>\*</sup> and C. Suh, "Crash to not crash: Playing video games to predict vehicle collisions," *The Thirty-fifth International Conference on Machine Learning (ICML'17) Workshop on Machine Learning for Autonomous Vehicles*, Sydney, Australia, Aug. 2017.
- KDDW'17 **K. Lee**, J. Chung and C. Suh, "Large-scale and Interpretable Collaborative Filtering for Educational Data", *the 23rd SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'17) Workshop on Advancing Education with Data*, Halifax, NS, Canada, Aug. 2017.
- NeurIPSW'16 **K. Lee**, J. Chung, Y. Cha and C. Suh, "Learning Analytics: Collaborative Filtering or Regression With Experts?", *The Thirtieth Conference on Neural Information Processing Systems (NeurIPS'16) Workshop on Machine Learning for Education*, Barcelona, Spain, Dec. 2016.
- NeurIPSW'15 **K. Lee**, M. Lam, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, "Speeding Up Distributed Machine Learning using Codes", *Twenty-ninth Conference on Neural Information Processing Systems (NeurIPS'15) Workshop on Machine Learning Systems*, Montréal, Canada, Dec. 2015.

### Peer-reviewed Conferences

- ISIT'19 **K. Lee**, H. Kim, K. Lee, C. Suh, and K. Ramchandran, "Synthesizing Differentially Private Datasets using Random Mixing", *The 2019 IEEE International Symposium on Information Theory (ISIT'19)*, Paris, France, July, 2019.
- Allerton'18 J. Yoon, **K. Lee** and C. Suh, "On the Joint Recovery of Community Structure and Community Features", *The 55th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2018
- ISIT'18 H. Park, **K. Lee**, J. Sohn, C. Suh and J. Moon, "Hierarchical Coding for Distributed Computing", *The 2018 IEEE International Symposium on Information Theory (ISIT'18)*, Vali, CO, June 2018.
- ISIT'18 T. Baharav, **K. Lee**, O. Ocal and K. Ramchandran, "Straggler-proofing massive-scale distributed matrix multiplication with d-dimensional product codes", *The 2018 IEEE International Symposium on Information Theory (ISIT'18)*, Vali, CO, June 2018.
- Allerton'17 G. Suh, **K. Lee** and C. Suh, "Matrix Sparsification for Coded Matrix Multiplication", *The 54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2017.
- ISIT'17 **K. Lee**, C. Suh and K. Ramchandran, "High-Dimensional Coded Matrix Multiplication", *The 2017 IEEE International Symposium on Information Theory (ISIT'17)*, Aachen, Germany, July 2017.
- ISIT'17 **K. Lee**, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, "Coded Computation for Multicore Setups", *The 2017 IEEE International Symposium on Information Theory (ISIT'17)*, Aachen, Germany, July 2017.
- ISIT'17 K. Ahn, **K. Lee** and C. Suh, "Information-theoretic Limits of Subspace Clustering", *The 2017 IEEE International Symposium on Information Theory (ISIT'17)*, Aachen, Germany, July 2017.
- ICC'17 K. Chandrasekher, **K. Lee**, P. Kairouz, R. Pedarsani and K. Ramchandran, "Asynchronous and Noncoherent Neighbor Discovery for the IoT Using Sparse-Graph Codes", *IEEE International Conference on Communications (ICC'17)*, Paris, France, May 2017.
- Allerton'16 K. Ahn, **K. Lee** and C. Suh, "Community Recovery in Hypergraphs", *The 54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sept. 2016.
- ISIT'16 **K. Lee**, M. Lam, R. Pedarsani, D. Papailiopoulos and K. Ramchandran, "Speeding Up Distributed Machine Learning using Codes", *The 2016 IEEE International Symposium on Information Theory (ISIT'16)*, Barcelona, Spain, July 2016.
- ISIT'16 **K. Lee**, R. Pedarsani and K. Ramchandran, "SAFFRON: Sparse-Graph Code Framework for Group Testing", *The 2016 IEEE International Symposium on Information Theory (ISIT'16)*, Barcelona, Spain, July 2016.

- Allerton'15 **K. Lee**, R. Pedarsani and K. Ramchandran, "On Scheduling Redundant Requests with Cancellation Overheads", *The 53rd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2015.
- Allerton'15 R. Pedarsani, **K. Lee** and K. Ramchandran, "Sparse Covariance Estimation Based on Sparse-Graph Codes", *The 53th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2015.
- ISIT'15 D. Yin, **K. Lee** and K. Ramchandran, "Fast and Robust Compressive Phase Retrieval with Sparse-Graph Codes", *The 2015 IEEE International Symposium on Information Theory (ISIT'15)*, Hong Kong, June 2015.
- ISIT'15 R. Pedarsani, **K. Lee** and K. Ramchandran, "Capacity-Approaching PhaseCode for Low-Complexity Compressive Phase Retrieval", *The 2015 IEEE International Symposium on Information Theory (ISIT'15)*, Hong Kong, June 2015.
- Allerton'14 R. Pedarsani, **K. Lee** and K. Ramchandran, "PhaseCode: Fast and Efficient Compressive Phase Retrieval based on Sparse-Graph-Codes", *The 52nd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2014.
- ISIT'14 N. Shah, **K. Lee** and K. Ramchandran, "The MDS Queue: Analysing the Latency Performance of Erasure Codes", *The 2014 IEEE International Symposium on Information Theory (ISIT'14)*, Honolulu, HI, July 2014.
- Allerton'13 N. Shah, **K. Lee** and K. Ramchandran, "When Do Redundant Requests Reduce Latency?", *The 51st Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2013.
- MASCOTS'13 **K. Lee**, L. Yan, A. Parkeh and K. Ramchandran, "A VoD System for Massively Scaled, Heterogeneous Environments: Design and Implementation", *The IEEE 21st International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS'13)*, San Francisco, CA, Aug. 2013.  
▷ **Best Paper Award Runner-up.**
- Allerton'12 **K. Lee**, H. Zhang, Z. Shao, M. Chen, A. Parekh and K. Ramchandran, "An Optimized Distributed Video-on-Demand Streaming System: Theory and Design", *The 50th Allerton Conference on Communication, Control and Computing*, Monticello, IL, Oct. 2012.
- Asilomar'11 S. Pawar, S. Rouayheb, H. Zhang, **K. Lee** and K. Ramchandran, "Codes for a Distributed Caching based Video-On-Demand System", *Asilomar Conference on Signals, Systems, and Computers*, Pacific grove, CA, Nov. 2011.
- INFOCOM'11 B. Nardelli, J. Lee, **K. Lee**, Y. Yi, S. Chong, E. Knightly and M. Chiang, "Experiment evaluation of optimal CSMA", *The 30th IEEE International Conference on Computer Communications (INFOCOM'11)*, Shanghai, China, Apr. 2011.

## INVITED TALKS

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- Recent Trends of AI Research
  - Krafton, Inc., June. 2021
  - Furiosa.ai, March. 2021
- Information Theory and Coding for Trustworthy and Scalable Machine Learning
  - "Shannon meets Turing" Colloquium, Seoul National University, Korea, May. 2021
  - POSTECH, Korea, June 2021
- Fairness in AI
  - IFDS Ethics & Algorithms SIG, University of California, Santa Cruz, Apr. 2021
  - Lectures on Machine Learning based ICT, organized by Korea Information and Communications Society, Seoul, Korea, Feb. 2021
  - Machine Learning Ideas, Microsoft Research New England, Dec. 2020
  - SILO Seminar, University of Wisconsin–Madison, Nov. 2020
  - BLISS Seminar, University of California, Berkeley, Nov. 2020
- Information Theory and Coding for Trustworthy and Scalable Machine Learning
  - Special Session, The 11th International Conference on ICT Convergence, Oct. 2020
- FR-Train: A mutual information-based approach to fair and robust training
  - Air Force Research Laboratory's Virtual Workshop on Adversarial Robustness of Machine Learning, May 2020
- Information Theory and Coding for Machine Learning at Scale
  - The Chaos and Complex Systems Seminar, University of Wisconsin-Madison, Feb. 2020
  - SK T-Brain, Jan. 2020
  - Furiosa.ai, Jan. 2020
  - Electrical & Computer Engineering, University of Wisconsin-Madison, Mar. 2019
- Speeding Up Distributed Machine Learning Using Codes
  - National Information Society Agency, Daegu, Korea, Jan. 2018
  - Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea, Jan. 2018
  - Institute of New Media and Communications, Seoul National University, Seoul, Korea, Dec. 2017

- Naver, Seongnam, Korea, May 2017
- Information Theory and Machine Learning Workshop, KAIST, Daejeon, Korea, May 2017
- Samsung Electronics DMC R&D Center, Seoul, Korea, June 2016
- Information Theory and Applications Workshop, La Jolla, CA, Feb. 2016
- Binary Rating Estimation with Graph Side Information
  - SILO Seminar, University of Wisconsin–Madison, Oct 2019
  - The 29th Joint Conference on Communications and Information, Korea, May 2019
  - Kakao Brain, Korea, May 2018
  - UC Berkeley BASiCS Seminar, Berkeley, CA, Nov. 2017
- Learning with Simulated Data
  - Samsung Electronics, Aug. 2019
  - Lectures on Machine Learning based ICT with Top Tier Conferences or Journals, organized by Korea Information and Communications Society, Seoul, Korea, Apr. 2019
- Machine Learning (Introduction and Advanced Topics)
  - Lectures on AI for Communication Systems, organized by Korea Information and Communications Society, Seoul, Korea, Jan. 2019
  - National Information Society Agency, Daegu, Korea, Nov. 2016
- Sub-linear Time Algorithms for Sparse Signal Recovery Based on Sparse-graph Codes
  - Institute of New Media and Communications, Seoul National University, Seoul, Korea, Jan. 2016
- A VoD System for Massively Scaled, Heterogeneous Environments: Design and Implementation
  - IEEE Communication Theory Workshop, Dana Point, CA, May 2015
  - University of Seoul, Seoul, Korea, May 2015
- The MDS Queue: Analysing the Latency Performance of Codes
  - Laboratory of Network Architecture Design and Analysis, KAIST, Daejeon, Korea, May 2014
  - IEEE International Conference on Big Data, Santa Clara, CA, Oct. 2013
- When Do Redundant Requests Reduce Latency?
  - DIMACS Workshop on Algorithms for Green Data Storage, Rutgers University, NJ, Dec. 2013

## TEACHING EXPERIENCE

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### **Instructor at University of Wisconsin–Madison**

*Fall 2019 – present*

- *ECE 204 Data Science & Engineering (Fall 21)*
- *ECE/CS 761 Mathematical Foundations of Machine Learning (Spring 21)*  
— 40 students enrolled.  
— Course evaluation: 4.25/5.00
- *ECE/CS/ME 532 Matrix Methods in Machine Learning (Fall 20)*  
— 111 students enrolled.  
— Course evaluation: 4.52/5.00
- *ECE/CS 761 Mathematical Foundations of Machine Learning (Spring 20)*  
— 69 students enrolled.  
— Course evaluation: 4.35/5.0
- *ECE/CS/ME 532 Matrix Methods in Machine Learning (Fall 19)*  
— 80 students enrolled.  
— Course evaluation: 4.47/5.00

### **Not allowed to teach while serving military duty**

*June 2016 - June 2019*

### **Head Graduate Student Instructor**

*Fall 2015, Fall 2014*

- *EECS 126 Probability and Random Processes at UC Berkeley*
- (Fall 2015) Awarded **The Outstanding Graduate Student Instructor Award (Top 10% GSIs)**

## PROFESSIONAL ACTIVITIES

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### **Journal Reviews**

- IEEE Transactions on Information Theory (2021, 2020, 2019, 2018, 2015, 2014)
- IEEE Journal on Selected Areas in Information Theory (2020)

- IEEE Journal of Selected Topics in Signal Processing (2018)
- IEEE Transactions on Signal Processing (2017)
- IEEE Internet of Things Journal (2017)
- IEEE/ACM Transactions on Networking (2019, 2018, 2017, 2016)
- IEEE Communications Letters (2019, 2018, 2016)
- IEEE Transactions on Services Computing (2017, 2016)
- IEEE Transactions on Parallel and Distributed Systems (2019, 2015)
- ACM Transactions on Mobile Computing (2016)
- ACM Transactions on Modeling and Performance Evaluation of Computing Systems (2018, 2017, 2016)
- Springer Machine Learning ECML-PKDD 2021 Special Issue (2021)

#### **Conference Senior Program Committee Member**

- NeurIPS Area Chair (2021)
- IJCAI (2021)

#### **Conference Program Committee Member**

- MLSys (Conference on Machine Learning and Systems) (2022, 2021, 2020)
- AAAI (2021)
- NeurIPS (2020, 2019, 2018, 2017)
- ICML (2021, 2019, 2018)
- ICLR (2022, 2021)
- COLT (2021)
- IEEE ISIT (2020, 2019, 2018, 2017, 2016, 2015, 2014)
- AISTATS (2021, 2020)
- ECML-PKDD (2020)
- ACML (PC Reviewer, 2019, 2018)
- ITW (2018)
- IEEE ICC (2021)
- IEEE IPDPS (Subreviewer, 2018)
- IEEE INFOCOM (2015, 2013)
- IEEE Globecom (2016)
- IEEE Globecom Workshop NETCOD (2016)

#### **Workshop Program Committee Member**

- Scalable Deep Learning over Parallel and Distributed Infrastructure (ScaDL) workshop (2021, 2020, 2019)
- The 4th instantiation of the International workshop on Embedded and Mobile Deep Learning (EMDL), co-located with MobiCom 2020

#### **Memberships**

- Member, IEEE, 2014 - Present / Member, IEEE Young Professionals, 2014 - Present / Member, IEEE Information Theory Society, 2014 - Present / Member, Young Engineer Honor Society of The National Academy of Engineering of Korea, 2007 - Present.

## **INDUSTRIAL EXPERIENCE**

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**Lytmus, Inc., San Francisco, CA**  
 – Software Engineering Intern

*June 2013 - Sept. 2013*

**Samsung Electronics, Suwon, South Korea**  
 – Software Engineering Intern

*July 2009*

**LG Display, Gumi, South Korea**  
 – Software/Hardware Engineering Intern

*June 2008 - Aug. 2008*

## **OUTREACH ACTIVITIES**

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- Invited speaker, Career Seminar, Seoul Science High School, April 2021
- Invited speaker, Dream Lecture, Korea Foundation for Advanced Studies, March 2021
- Invited speaker, Career paths in EE, KAIST, December 2020

- Invited speaker, Career Seminar, Young Engineers Honor Society of The National Academy of Engineering of Korea, May 2020
- Invited speaker, Open Seminar, Young Engineers Honor Society of The National Academy of Engineering of Korea, Aug. 2018
- Invited speaker, Career Seminar, Young Engineers Honor Society of The National Academy of Engineering of Korea, May 2017
- Invited speaker, Freshman Seminar, KAIST, Oct. 2016
- **Founder, Freedu (free online tutoring service for underprivileged students)**, 2014-2015
- **Mentor, Dream Concert (offline mentoring service for underprivileged students)**, 2019, 2015, 2014
- Invited speaker, Freshman Seminar, KAIST, Oct. 2016
- Appointed mentor of KAIST Presidential Fellows, 2012-2015