

# DONGEUN LEE

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Computer Science & Information Systems, College of Science and Engineering, Texas A&M University - Commerce, Commerce, TX

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## EDUCATION

- **Seoul National University (SNU)**, Seoul, Korea

Ph. D. in Electrical Engineering and Computer Science February 2014

Advisor: Prof. Heonshik Shin

**Thesis:** *Analysis for Scalable Coding of Quality-Adjustable Sensor Data.*

- **Seoul National University (SNU)**, Seoul, Korea

B.S. in Computer Science and Engineering February 2006

## RESEARCH INTERESTS

- **Big Data Analytics**

-Data Summarization

-Streaming Data Analysis

-Scalable Algorithms

## APPOINTMENTS

- **Associate Professor, Texas A&M University - Commerce (TAMUC), Commerce, TX** 2022—Present
- **Assistant Professor, Texas A&M University - Commerce (TAMUC), Commerce, TX** 2016—2022
- **Faculty Research Affiliate, Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA** 2016–2018  
-Scientific Data Management Group, Computational Research Division
- **Computer Systems Engineer, Postdoctoral Research Affiliate, Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA** 2015–2016  
-Researched big streaming data analysis problems.  
-Participated in two projects: “Open Framework for High-Performance Streaming Analytics” and “Behavior Analysis on Residential Electricity Usage Data.”
- **Postdoctoral Research Associate, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea** 2014–2016  
-Researched big spatio-temporal data archiving and sensing problems.  
-Studied machine learning algorithms and led the project “Failure Prediction and Diagnosis Algorithm for RMS.”  
-Advised students in research.  
-Published three international conference papers (UAI 2016, SDM 2015, IEEE BigData 2014).
- **Research Intern, Hokkaido University, Sapporo, Japan** Fall 2009, Spring 2010  
-Research theme: “Energy-aware and Fault-tolerant Peat Fire Monitoring with Wireless Sensor Network” under guidance of Prof. Toshihisa Honma.  
-Deployed and operated 20 sensor motes at experimental farms in Hokkaido university.

- TinyOS programming for routing of monitored environmental sensor data and sending alarm in case of fire.
- Published a domestic conference paper and subsequently an international conference paper (AINA 2012).

- **Instructor, BIT Computer Academy, Seoul, Korea** **2008–2010**  
-Lectured three one-month courses: “UNIX/LINUX System Programming,” “Client/Server Programming,” and “MS Visual Studio 2008.”
- **Software Engineer, SimsLine Inc., Seoul, Korea** **2003–2004**  
-Developed/maintained text-to-speech applications using L&H API in MS Windows platform.  
-Developed/maintained device-sync applications that can synchronize music with MP3 players using WDM (Windows driver model) in MS Windows platform.
- **Software Engineer, Hyun-seung Inc., Seoul, Korea** **2002–2003**  
-Maintained a graphical desktop sharing system similar to VNC written in MFC/Win32 API.
- **Software Engineer, Betaland Inc., Seoul, Korea** **2001**  
-Developed an educational purpose application in MS Windows platform that could record Windows desktop and annotate on the recorded desktop.

## TEACHING

- Big Data Computing and Analytics (CSCI 573), TAMUC, 2017—Present.
- Fundamentals of Programming C/C++ (CSCI 515), TAMUC, 2016—Present.
- Programming Fundamentals II (COSC 1337, COSC 1437), TAMUC, 2016—Present.
- Introduction to Computer Science and Programming (COSC 1436), TAMUC, 2021—Present.
- Foundations of Information Security (CSCI 351), TAMUC, 2020.
- Operating Systems (CSCI 530), TAMUC, 2020.

## GRANT

- **Co-Principal Investigator, Multilingual Computational Thinking: Teaching Introductory Programming Classes through Low-Level and High-Level Game Programming, NSF 19-601 Improving Undergraduate STEM Education: Education and Human Resources, National Science Foundation (NSF), Sept. 2020—Aug. 2024.**  
-Will investigate ways to improve introductory programming courses pedagogy by promoting computational thinking of students through the use of video game development and multiple programming languages simultaneously.

## AWARDS

- **Generative Reconstruction of Statistically Reduced Data Sets, Presidential GAR Initiative, TAMUC, Aug. 2022—Jul. 2024.**  
-Will investigate how state-of-the-art generative methods will enable data reconstruction given only statistical information.

- **Study of Statistical Multivariate Time Series Data Reduction Algorithms, Visiting Faculty Program (VFP), Office of Workforce Development for Teachers and Scientists (WDTS), Department of Energy (DOE) Office of Science, Jun. 2021—Aug. 2021.**  
-Further studied statistical multivariate data reduction algorithms to design easily interpretable encoded stream structure and decoding algorithms that can guarantee near-identical recovery of original data.
- **Multi-Tasks Learning Based on Hinting, Presidential GAR Initiative, TAMUC, Aug. 2020—May 2021.**  
-Investigated how contextual information can improve classification performance limited by conventional static and generic machine learning.
- **Fast Multivariate Time Series Data Reduction with Statistical Perspective, Visiting Faculty Program (VFP), Office of Workforce Development for Teachers and Scientists (WDTS), Department of Energy (DOE) Office of Science, Jun. 2020—Aug. 2020.**  
-Designed lightweight multivariate data reduction algorithms with statistical perspective that can selectively preserve significant information and reduce the effort of analyzing very large dataset.
- **DataCom 2015 Best Paper Award**  
-Taehoon Kim, **Dongeun Lee**, Jaesik Choi, Anna Spurlock, Alex Sim, Annika Todd, and Kesheng Wu, "Extracting Baseline Electricity Usage Using Gradient Tree Boosting," *1st Intl. Conf. Big Data Intelligence and Computing (DataCom)*, pp. 734-741, Dec. 2015.
- **IEEE ISCC 2010 Best Paper Award - Student Category**  
-**Dongeun Lee**, Jonghun Lee, Yonghee Lee, Heejung Lee, and Heonshik Shin, "Low-Complexity Aggregation of Collected Images with Correlated Fields of View in Wireless Video Sensor Networks," *IEEE 15th Symp. Computers and Communications (ISCC)*, pp. 765-771, Jun. 2010.
- **Efficient and Stable Video Transmission over Wireless Video Sensor Network, Korea Student Aid Foundation (KOSAF) Graduate Research Grant, Korea, Sept. 2008—Aug. 2009.**  
-Reviewed multiview video coding (MVC) for an application in video sensor network.  
-The grant served as a basis for research of the ISCC 2010 paper.

## PUBLICATIONS

### • Refereed Conferences

1. Woojin Cho, Seunghyeon Cho, Hyundong Jin, Jinsung Jeon, Kookjin Lee, Sanghyun Hong, **Dongeun Lee**, Jonghyun Choi, and Noseong Park, "Operator-learning-inspired Modeling of Neural Ordinary Differential Equations," *38th AAAI Conf. Artificial Intelligence (AAAI)*, to appear, Feb. 2024.
2. Jaehoon Lee, Chan Kim, Gyumin Lee, Haksoo Lim, Jeongwhan Choi, Kookjin Lee, **Dongeun Lee**, Sanghyun Hong, and Noseong Park, "HyperNetwork Approximating Future Parameters for Time Series Forecasting under Temporal Drifts," *3rd Workshop on Distribution Shifts (DistShift) in conjunction with Conf. Neural Information Processing Systems (NeurIPS)*, to appear, Dec. 2023.
3. Anh Tong, Thanh Nguyen-Tang, **Dongeun Lee**, Toan Tran, and Jaesik Choi, "SigFormer: Signature Transformers for Deep Hedging," *ACM 4th Intl. Conf. AI in Finance (ICAIF)*, pp. 124–132, Nov. 2023.
4. Junhee Ryu, **Dongeun Lee**, Kang G. Shin, and Kyungtae Kang, "Fast Application Launch on Personal Computing/Communication Devices," *21st USENIX Conf. File and Storage Technologies (FAST)*, pp. 425–440, Feb. 2023.
5. Minji Kim, **Dongeun Lee**, Kookjin Lee, Doowon Kim, Sangman Lee, and Jinoh Kim, "Deep Sequence Models for Packet Stream Analysis and Early Decisions," *IEEE 47th Conf. Local Computer Networks (LCN)*, pp. 56–63, Sept. 2022.

6. Chiho Kim, Sang-Yoon Chang, Jonghyun Kim, **Dongeun Lee**, and Jinoh Kim, "Zero-Day Malware Detection using Threshold-Free Autoencoding Architecture," *IEEE 9th Intl. Conf. Big Data (IEEE BigData)*, pp. 1279–1284, Dec. 2021.
7. Jeehyun Hwang, Jeongwhan Choi, Hwangyong Choi, Kookjin Lee, **Dongeun Lee**, and Noseong Park, "Climate Modeling with Neural Diffusion Equations," *IEEE 21st Intl. Conf. Data Mining (IEEE ICDM)*, pp. 230–239, Dec. 2021.
8. Duanshun Li, Jing Liu, **Dongeun Lee**, Ali Seyedmazloom, Giridhar Kaushik, Kookjin Lee, and Noseong Park, "A Novel Method to Solve Neural Knapsack Problems," *38th Intl. Conf. Machine Learning (ICML)*, pp. 6414–6424, Jul. 2021.
9. Jinsung Jeon, **Dongeun Lee**, Seunghyun Hwang, Soyoung Kang, Noseong Park, Duanshun Li, Kookjin Lee, and Jing Liu, "Large-Scale Flight Frequency Optimization with Global Convergence in the US Domestic Air Passenger Markets," *SIAM 21st Intl. Conf. Data Mining (SDM)*, pp. 711–719, Apr./May 2021.
10. Kaoning Hu, **Dongeun Lee**, and Tianyang Wang, "Single Image Super-Resolution using Vectorization and Texture Synthesis," *16th Intl. Conf. Computer Vision Theory and Applications (VISAPP)*, pp. 512–519, Feb. 2021.
11. Jungeun Kim, Kookjin Lee, **Dongeun Lee**, Sheo Yon Jhin, and Noseong Park, "DPM: A Novel Training Method for Physics-Informed Neural Networks in Extrapolation," *35th AAAI Conf. Artificial Intelligence (AAAI)*, pp. 8146–8154, Feb. 2021.
12. Mohammad Al Olaimat, **Dongeun Lee**, Youngsoo Kim, Jonghyun Kim, and Jinoh Kim, "A Learning-Based Data Augmentation for Network Anomaly Detection," *29th Intl. Conf. Computer Communications and Networks (ICCCN)*, pp. 1–10, Aug. 2020.
13. J. Kade Gibson, **Dongeun Lee**, Jaesik Choi, and Alex Sim, "Dynamic Online Performance Optimization in Streaming Data Compression," *IEEE 6th Intl. Conf. Big Data (IEEE BigData)*, pp. 534–541, Dec. 2018 (equal contribution).
14. Kesheng Wu, **Dongeun Lee**, Alex Sim, and Jaesik Choi, "Statistical Data Reduction for Streaming Data," *2nd New York Scientific Data Summit (NYSDS)*, pp. 1–6, Aug. 2017.
15. **Dongeun Lee**, Alex Sim, Jaesik Choi, and Kesheng Wu, "Improving Statistical Similarity Based Data Reduction for Non-Stationary Data," *29th Intl. Conf. Scientific and Statistical Database Management (SSDBM)*, pp. 37:1–37:6, Jun. 2017.
16. **Dongeun Lee**, Alex Sim, Jaesik Choi, and Kesheng Wu, "Novel Data Reduction Based on Statistical Similarity," *28th Intl. Conf. Scientific and Statistical Database Management (SSDBM)*, pp. 21:1–21:12, Jul. 2016.
17. **Dongeun Lee**, Rafael Lima, and Jaesik Choi, "Improving Imprecise Compressive Sensing Models," *32nd Conf. Uncertainty in Artificial Intelligence (UAI)*, pp. 397–406, Jun. 2016.
18. Taehoon Kim, **Dongeun Lee**, Jaesik Choi, Anna Spurlock, Alex Sim, Annika Todd, and Kesheng Wu, "Extracting Baseline Electricity Usage Using Gradient Tree Boosting," *1st Intl. Conf. Big Data Intelligence and Computing (DataCom)*, pp. 734–741, Dec. 2015.
19. Junhee Ryu, Haksu Jeong, **Dongeun Lee**, Heonshik Shin, and Kyungtae Kang, "ClusterFetch: A Lightweight Prefetcher that Responds to Intensive Disk Read Patterns," *IEEE 12th Intl. Conf. Embedded Software and Systems (ICSS)*, pp. 1051–1056, Aug. 2015 (corresponding author).
20. **Dongeun Lee** and Jaesik Choi, "Learning Compressive Sensing Models for Big Spatio-Temporal Data," *SIAM 15th Intl. Conf. Data Mining (SDM)*, pp. 667–675, Apr./May 2015.
21. **Dongeun Lee** and Jaesik Choi, "Low Complexity Sensing for Big Spatio-Temporal Data," *IEEE 2nd Intl. Conf. Big Data (IEEE BigData)*, pp. 323–328, Oct. 2014.
22. IkJune Yoon, Dong Kun Noh, **Dongeun Lee**, Rony Teguh, Toshihisa Honma, and Heonshik Shin, "Reliable Wildfire Monitoring with Sparsely Deployed Wireless Sensor Networks," *IEEE 26th Intl. Conf. Advanced Information Networking and Applications (AINA)*, pp. 460–466, Mar. 2012.
23. **Dongeun Lee**, Heonshik Shin, and Eunjeong Park, "Modeling Recovery Strategies in Service-Oriented Architecture using a Markov Decision Process," *IEEE 13th Intl. Symp. High-Assurance Systems Engineering (HASE)*, pp. 285–290, Nov. 2011.

24. **Dongeun Lee**, Jonghun Lee, Yonghee Lee, Heejung Lee, and Heonshik Shin, "Low-Complexity Aggregation of Collected Images with Correlated Fields of View in Wireless Video Sensor Networks," *IEEE 15th Symp. Computers and Communications (ISCC)*, pp. 765–771, Jun. 2010.
25. Heejung Lee, Yonghee Lee, **Dongeun Lee**, Jonghun Lee, and Heonshik Shin, "Implementing Rate Allocation and Control for Real-Time H.264/SVC Encoding," *IEEE 28th Intl. Conf. Consumer Electronics (ICCE)*, pp. 269–270, Jan. 2010.
26. **Dongeun Lee**, Yonghee Lee, Heejung Lee, Jonghun Lee, and Heonshik Shin, "Determining Efficient Bit Stream Extraction Paths in H.264/AVC Scalable Video Coding," *42nd Asilomar Conf. Signals, Systems, and Computers (Asilomar)*, pp. 2233–2237, Oct. 2008.
27. Heejung Lee, **Dongeun Lee**, Yonghee Lee, and Heonshik Shin, "Luminance Scalable Coding using H.264/AVC SVC Extensions for Mobile Video Applications," *IEEE Intl. Conf. Multimedia and Expo (ICME)*, pp. 1025–1028, Jun. 2008.
28. Donggeon Noh, **Dongeun Lee**, and Heonshik Shin, "Mission-Oriented Selective Routing for Wireless Sensor Network," *2nd Intl. Conf. Communications and Networking in China (CHINACOM)*, pp. 809–813, Aug. 2007.
29. Hyuntaek Kwon, Donggeon Noh, Junu Kim, Joonho Lee, **Dongeun Lee**, and Heonshik Shin, "Low-Latency Routing for Energy-Harvesting Sensor Networks," *4th Intl. Conf. Ubiquitous Intelligence and Computing (UIC)*, pp. 422–433, Jul. 2007.
30. Donggeon Noh, Junu Kim, Joonho Lee, **Dongeun Lee**, Hyuntaek Kwon, and Heonshik Shin, "Priority-Based Routing for Solar-Powered Wireless Sensor Networks," *2nd Intl. Symp. Wireless Pervasive Computing (ISWPC)*, pp. 53–58, Feb. 2007.

- **Journals**

31. Chiho Kim, Sang-Yoon Chang, Jonghyun Kim, **Dongeun Lee**, and Jinoh Kim, "Automated, Reliable Zero-Day Malware Detection Based on Autoencoding Architecture," *IEEE Transactions on Network and Service Management*, vol. 20, no. 3, pp. 3900–3914, Sept. 2023.
32. Hwangyong Choi, Jeongwhan Choi, Jeehyun Hwang, Kookjin Lee, **Dongeun Lee**, and Noseong Park, "Climate Modeling with Neural Advection-Diffusion Equation," *Knowledge and Information Systems*, vol. 65, no. 6, pp. 2403–2427, Jun. 2023.
33. Chiho Kim, Sang-Yoon Chang, **Dongeun Lee**, Jonghyun Kim, and Jinoh Kim, "Reliable Detection of Location Spoofing and Variation Attacks," *IEEE Access*, vol. 11, pp. 10813–10825, 2023.
34. Kookjin Lee, Howard C. Elman, Catherine E. Powell, and **Dongeun Lee**, "Enhanced Alternating Energy Minimization Methods for Stochastic Galerkin Matrix Equations," *BIT Numerical Mathematics*, vol. 62, no. 3, pp. 965–994, Sept. 2022.
35. Chanyoung Park, Yoonsoo Jo, **Dongeun Lee**, and Kyungtae Kang, "Change Your Cluster to Cold: Gradually Applicable and Serviceable Cold Storage Design," *IEEE Access*, vol. 7, pp. 110216–110226, 2019 (corresponding author).
36. Jiwoong Won, Oseok Kwon, Junhee Ryu, **Dongeun Lee**, and Kyungtae Kang, "iFetcher: User-Level Prefetching Framework with File-System Event Monitoring for Linux," *IEEE Access*, vol. 6, pp. 46213–46226, 2018.
37. Junhee Ryu, **Dongeun Lee**, Kang G. Shin, and Kyungtae Kang, "ClusterFetch: A Lightweight Prefetcher for Intensive Disk Reads," *IEEE Transactions on Computers*, vol. 67, no. 2, pp. 284–290, Feb. 2018 (corresponding author).
38. Jaemyoun Lee, Haegwon Jeong, Won-Joo Lee, Hyo-Joong Suh, **Dongeun Lee**, and Kyungtae Kang, "Advanced Primary-Backup Platform with Container-Based Automatic Deployment for Fault-Tolerant Systems," *Wireless Personal Communications*, vol. 98, no. 4, pp. 3177–3194, Feb. 2018.
39. Taehoon Kim, Jaesik Choi, **Dongeun Lee**, Alex Sim, Anna Spurlock, Annika Todd, and Kesheng Wu, "Predicting Baseline for Analysis of Electricity Pricing," *International Journal of Big Data Intelligence*, vol. 5, nos. 1/2, pp. 3–20, 2018.



40. Junhee Ryu, **Dongeun Lee**, Changhee Han, Heonshik Shin, and Kyungtae Kang, "File-System-Level Storage Tiering for Faster Application Launches with No Mapping Overhead," *IEEE Access*, vol. 4, pp. 3688–3696, 2016 (corresponding author).
41. **Dongeun Lee**, Jaesik Choi, and Heonshik Shin, "A Scalable and Flexible Repository for Big Sensor Data," *IEEE Sensors Journal*, vol. 15, no. 12, pp. 7284–7294, Dec. 2015.
42. **Dongeun Lee**, Junhee Ryu, and Heonshik Shin, "Scalable Management of Storage for Massive Quality-Adjustable Sensor Data," *Computing*, vol. 97, no. 8, pp. 769–793, Aug. 2015.
43. **Dongeun Lee**, Jaesik Choi, and Heonshik Shin, "Low-Complexity Compressive Sensing with Down-sampling," *IEICE Electronics Express*, vol. 11, no. 3, pp. 20130947, Feb. 2014.
44. Heejung Lee, Yonghee Lee, Jonghun Lee, **Dongeun Lee**, and Heonshik Shin, "Design of a Mobile Video Streaming System using Adaptive Spatial Resolution Control," *IEEE Transactions on Consumer Electronics*, vol. 55, no. 3, pp. 1682–1689, Aug. 2009.
45. Donggeon Noh, **Dongeun Lee**, and Heonshik Shin, "QoS-Aware Geographic Routing for Solar-Powered Wireless Sensor Networks," *IEICE Transactions on Communications*, vol. 90, no. 12, pp. 3373–3382, Dec. 2007.

#### • Abstracts

46. **Dongeun Lee**, Kaoning Hu, Omar El Ariss, and Kibum Kwon, "Multiple Programming Languages for Improving Computational Thinking in CS1," *ACM 54th Technical Symp. Computer Science Education (SIGCSE)*, p. 1377, Mar. 2023.
47. Chanyoung Park, Yoonsue Joe, Myounghwan Yoo, **Dongeun Lee**, and Kyungtae Kang, "Poster: Prototype of Configurable Redfish Query Proxy Module," *IEEE 28th Intl. Conf. Network Protocols (ICNP)*, pp. 1–2, Oct. 2020.
48. **Dongeun Lee**, Alex Sim, Jaesik Choi, and Kesheng Wu, "Expanding Statistical Similarity Based Data Reduction to Capture Diverse Patterns," *27th Data Compression Conf. (DCC)*, p. 445, Apr. 2017.
49. Haksu Jeong, Junhee Ryu, **Dongeun Lee**, Jaemyoun Lee, Heonshik Shin, and Kyungtae Kang, "ClusterFetch: A Lightweight Prefetcher for General Workloads," *ACM/SPEC 6th Intl. Conf. Performance Engineering (ICPE)*, pp. 99–100, Jan./Feb. 2015.
50. Changhee Han, Junhee Ryu, **Dongeun Lee**, Jaemyoun Lee, Kyungtae Kang, and Heonshik Shin, "File-System-Level Flash Caching for Improving Application Launch Time on Logical Hybrid Disks," *IEEE 33rd Intl. Performance Computing and Communications Conf. (IPCCC)*, pp. 1–2, Dec. 2014.

#### • Technical Report

51. **Dongeun Lee**, Alex Sim, Jaesik Choi, and Kesheng Wu, "IDEALEM: Statistical Similarity Based Data Reduction," arXiv:1911.06980 [cs.DB], 2019.

#### • Book Chapter

52. **Dongeun Lee**, "Big Sensor Data Acquisition and Archiving with Compression," in *Big Data and Visual Analytics*, Sang C. Suh and Thomas Anthony, Eds. Springer International Publishing, pp. 115–143, 2017.

#### • Thesis

53. **Dongeun Lee**, *Analysis for Scalable Coding of Quality-Adjustable Sensor Data*, Ph. D. Thesis, Department of Electrical Engineering and Computer Science, Seoul National University, 2014.

#### • Manuscripts in Preparation

- Noseong Park, Ali Seyedmazloom, Duanshun Li, **Dongeun Lee**, and Jing Liu, "Solving Quadratic Assignment Problems with Two-dimensional Pseudo One-hot Softmax."
- Jungeun Kim, Seunghyun Hwang, Jihyun Hwang, Kookjin Lee, **Dongeun Lee**, and Noseong Park, "PDE-regularized Neural Networks for Image Classification."

-Wenbo Zou, Jiwoong Won, Jemin Ahn, **Dongeun Lee**, and Kyungtae Kang, "Ir-LSTM: Intentionality-related Deep Learning in Web Prefetching."

## PAST RESEARCH PROJECTS

- **Open Framework for High-Performance Streaming Analytics, LBNL** 2015–2016
  - Studied an effective streaming data analysis framework for high-velocity data from smart grid.
  - Implemented streaming data compression schemes with the Locally Exchangeable Measures technique developed for data reduction and pattern discovery.
  - Released an open software for streaming data compression (IDEALEM) and published an international conference paper (SSDBM 2016).
- **Behavior Analysis on Residential Electricity Usage Data, LBNL** 2015
  - Authored two manuscripts for publication.
  - Published an international conference paper (DataCom 2015) and prepared a manuscript.
- **Failure Prediction and Diagnosis Algorithm for RMS (Remote Monitoring System), UNIST** 2015
  - Led the project with Doosan Heavy Industry.
  - Applied various machine learning algorithms to power plant sensor data for detecting failure.
- **Breakpoint-Based Prefetching Techniques to Improve the Responsiveness of Mobile Applications, Hanyang University** 2014–2016
  - Studied diverse prefetching/caching techniques on memory hierarchy that can improve application launch times.
  - Published three international conference papers (ICISS 2015, ICPE 2015, IPCC 2014) and prepared two manuscripts.
- **Development of Next Generation File System for Urban Computing, SNU** 2009–2012
  - Devised new data management scheme for huge amount of data generated in urban areas.
  - Analyzed conventional distributed file system codes for an adaptation to comply with characteristics of urban sensing data.
  - Focused on data quality adjustment for efficient management of data storage.
  - Derived the idea for the Ph. D. dissertation.
  - Published two journal papers (IEEE Sensors Journal, Computing).
- **An Adaptive Service Composition Technique for Reliable Service-Oriented Architecture, SNU** 2009–2011
  - Surveyed numerous literature regarding service-oriented computing with emphasis on reliability and fault-tolerance.
  - Published an international conference paper (HASE 2011).
- **A Study on Scalable Video Server for Heterogeneous Network Environment, SNU** 2007–2008
  - Studied H.264/AVC SVC (scalable video coding) extension standard and analyzed its reference software JSVM (joint scalable video model).
  - Conducted profiling of JSVM and evaluated coding efficiencies on diverse parameter combinations.
  - Surveyed numerous literature regarding image and video coding issues.
  - Published an international conference paper (Asilomar 2008).
- **Development of Ubiquitous Storage Dust, SNU** 2006
  - Researched data synchronization problems between a central storage server and many storage dusts with lower capacity and bandwidth (Intel's XScale PXA270 - ARMv5TE ISA compliant).

-Developed data synchronization and conflict resolution module using cross compiler that could merge modified replicas across storage nodes and also support disconnected operation and asynchronous update.

## PATENT

-Junhee Ryu, **Dongeun Lee**, and Kwangjin Ko, "Prefetching Method for Flash Memory Device and Recording Medium in Which Method is Recorded," Korean Patent No. 1020140061018, Korea, May 2014.

## SOFTWARE PACKAGE RELEASE AND DEMO

-Implementation of Dynamic Extensible Adaptive Locally Exchangeable Measures (IDEALEM), *ACM/IEEE 29th Intl. Conf. High Performance Computing, Networking, Storage, and Analysis (SC)*, [Demo](#), Nov. 2016.

-Implementation of Dynamic Extensible Adaptive Locally Exchangeable Measures (IDEALEM), [LBNL S/W Disclosure No. 2016-045](#), under the modified BSD license, USA, Feb. 2016.

## INVITED TALKS

-*Big Data Summarization with Statistical Perspective*, Department of Computer Science and Engineering, Hanyang University, Nov. 2022.

-*Streaming Data Reduction for IoT*, Division of Media, Culture, and Design Technology, Hanyang University, Nov. 2022.

-*Study of Statistical Multivariate Time Series Data Reduction Algorithms*, Computational Research Division, Lawrence Berkeley National Laboratory (LBNL), Oct. 2021.

-*Fast Multivariate Time Series Data Reduction with Statistical Perspective*, Computational Research Division, Lawrence Berkeley National Laboratory (LBNL), Aug. 2020.

-*Challenges in Statistical Similarity Based Data Reduction*, Department of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology (UNIST), Aug. 2019.

-*Challenges in Statistical Similarity Based Data Reduction*, Department of Computer Science, Texas A&M University-Commerce (TAMUC), Nov. 2018.

-*Novel Data Reduction Based on Statistical Similarity*, Computational Research Division, Lawrence Berkeley National Laboratory (LBNL), May 2016.

-*Big Sensor Data Acquisition and Archiving*, Computational Research Division, Lawrence Berkeley National Laboratory (LBNL), Nov. 2015.

-*Efficient Big Data Signal Acquisition by Compressive Sensing and Random Sampling*, Department of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology (UNIST), Mar. 2015.

-*An Introduction to Compressive Sensing and Big Data Applications*, Department of Computer Science and Engineering, Hanyang University, Nov. 2014.

-*An Introduction to Compressive Sensing and Big Data Applications*, Department of Computer Science, Korea Advanced Institute of Science and Technology (KAIST), Aug. 2014.

-*An Introduction to Compressive Sensing*, School of Electronic Engineering, Soongsil University, Jan. 2014.

## PROFESSIONAL ACTIVITIES

-TPC, ACM Technical Symposium on Computer Science Education (SIGCSE) - Associate Program Chair for Posters Track, 2023.

-TPC, AAAI Conference on Artificial Intelligence (AAAI), 2024, 2021.

-TPC, International Conference on Artificial Intelligence and Statistics (AISTATS), 2023.

-TPC, International Joint Conference on Artificial Intelligence (IJCAI), IJCAI 2024, IJCAI 2023, IJCAI-ECAI 2022, IJCAI-PRICAI 2020.



- TPC, IEEE International Conference on Communications (IEEE ICC) - Big Data Track, Selected Areas in Communications Symposium, 2023; Cloud Communications and Networks Track, Selected Areas in Communications Symposium, 2018.
- TPC, IEEE Global Communications Conference (GLOBECOM) - Big Data Track, Selected Areas in Communications Symposium, 2017—2022.
- TPC, International Workshop on Systems and Network Telemetry and Analysis (SNTA) in conjunction with ACM International Symposium on High-Performance Parallel and Distributed Computing (ACM HPDC), 2019—Present.
- Guest Editor, Transactions on Emerging Telecommunications Technologies - SI on Real-Time Internet of Things (IoT) and Cyber-Physical Systems (CPS), 2018.
- Reviewer, DOE Office of Science Advanced Scientific Computing Research (ASCR) Applied Mathematics, 2023.
- Reviewer, AMS Mathematical Reviews, 2016—Present.
- Reviewer, IEEE Internet of Things Journal, 2023.
- Reviewer, IEEE Transactions on Signal and Information Processing over Networks, 2022.
- Reviewer, IEEE Transactions on Computers, 2020.
- Reviewer, International Conference on Scientific and Statistical Database Management (SSDBM), 2023, 2020.
- Reviewer, IEEE Internet of Things Journal, 2018.
- Reviewer, IEEE Systems Journal, 2015–2016.
- Reviewer, Conference on Uncertainty in Artificial Intelligence (UAI), 2016.
- Reviewer, AAAI Conference on Artificial Intelligence (AAAI), 2015.
- Reviewer, Conference on Neural Information Processing Systems (NIPS), 2015.
- Reviewer, IEEE Journal on Selected Areas in Communications, 2014.
- Judge, ACM Student Research Competition at SIGCSE 2023.