

Research Areas Overview

Computer science and engineering is the academic discipline devoted to the study and research of various aspects of computation and computers. It covers a wide range of subjects relating to computing, from the theoretical foundations of computing to application systems based on information technology. Our goal is to further our knowledge of algorithms, techniques, and applications for all components of computing systems. Considering that most human activities use information in a high tech society, the significance of computer science and engineering is paramount, not only to maintain a technological edge but also to improve people's quality of life.



Applied Computing

- HCI** *Human-Computer Interaction*
Sungahn Ko, Seungmoon Choi, Inseok Hwang, Eunkyung Jo
- NLP** *Natural Language Processing*
Hyounghun Kim, Hwanjo Yu
- VC** *Visual Computing*
Suha Kwak, Wonhwa Kim, Ilwoo Lyu, Seung-Hwan Baek, Seungyong Lee, Minsu Cho, Sunghyun Cho, Jeany Son, Sang Hyun Park
- DS** *Data Science*
Hwanjo Yu, Wook-Shin Han
- ML** *Machine Learning*
Suha Kwak, Dongwoo Kim, Wonhwa Kim, Ilwoo Lyu, Sangdon Park, Eunhyeok Park, Jungseul Ok, Jeany Son, Namhoon Lee, Wonyeol Lee, Myeongjae Jeon, Minsu Cho, Kwang-Sung Jun

Foundational Computing

- TC** *Theory of Computing*
Hee-Kap Ahn, Eunjin Oh
- SS** *Secure Systems*
Seulbae Kim, Sangdon Park
- CS** *Computing Systems*
Gwangsun Kim, Seulbae Kim, Jisung Park, Sungjin Lee, Myeongjae Jeon
- NS** *Network Systems*
Young-Joo Suh, Hwangjun Song, Inseok Hwang
- SP** *Software Engineering & Programming Languages*
Sungwoo Park, Kyungmin Bae, Wonyeol Lee

The Department of Computer Science and Engineering at POSTECH conducts world-class research in a comprehensive range of information technology areas described as follows.

HCI *Human-Computer Interaction*

HCI studies everything related to two-way communication between users and computers, based on the fact that it is human beings who use computers. It is one of the most exemplary interdisciplinary fields combining computer engineering-based technology with humanitarian studies, which has its basis in psychology, sociology, etc.

NLP *Natural Language Processing*

Natural Language Processing (NLP) aims to enable computers to understand, interpret, and generate human language. NLP involves the development and application of Large Language Models (LLMs) for various tasks such as machine translation, summarization, sentiment analysis, question answering, and chatbots.

VC *Visual Computing*

Visual Computing aims to recognize, search, analyze, synthesize, and process images and videos. It covers a wide variety of subfields including Computer Graphics and Computer Vision. Computer Graphics aims to develop algorithms and techniques that can help create images and videos, and Computer Vision aims to develop algorithms for analyzing images and videos.

DS *Data Science*

Data Science aims to recognize, search, analyze, process, and represent data and deliver them effectively to users. Data science has critical importance in today's IT world where a massive amount of data is generated from a wide variety of sources in many different ways.

ML *Machine Learning*

Machine Learning aims to develop algorithms that improve automatically through experience. It is a rapidly growing field, which has numerous applications, due to the availability of large datasets and the growth of computing power. The department at POSTECH focuses on both theoretical and practical aspects of machine learning.

TC *Theory of Computing*

Theory of Computation aims to understand the nature of computation and analyze fundamental computational problems arising in other fields in Computer Science using mathematical tools. It covers a wide variety of topics including algorithms, data structures, and computational complexity.

SS *Secure Systems*

Security Systems aims to develop techniques for protecting computer systems and networks from the theft or damage to the software and hardware. Its importance is rapidly growing as reliance on computer systems is increasing. The department at POSTECH covers systems security, software security, mobile security, and IoT security.

CS *Computing Systems*

Computing Systems aims to develop and operate various optimal computer systems with consideration of performance, cost, and reliability, from the device level to a large scale computing environment. It is a fundamental field that props up the computer-based IT industry. At the core of its importance lies in-depth knowledge in theory and practice of hardware and software in a large scope.

NS *Network Systems*

Network Systems is an essential field in the modern computer industry in which information is disseminated by many connected computers. Not only that, its increasing role as an infrastructure that supports various fields including BT and NT is ever more important.

SP *Software Engineering & Programming Languages*

Software Engineering & Programming Languages aims to develop programming languages and software that provide theoretical backgrounds and facilitate communication between the computer and human beings, which are indispensable to computing theory, logic, language theory within the computing environment.



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Education	▪ Ph.D. Purdue Univ. (2014) ▪ B.S. Korea Univ. (2006)	
Career	▪ 2014- Post-doctoral researcher, Purdue University ▪ 2016-2025 Assistant, Associate Professor, UNIST ▪ 2022-2023 Visiting Professor, UC Davis, CA, USA ▪ 2025-Present Associate Professor, POSTECH	

Research Overview

My research areas include Visual Analytics, which is a multi-disciplinary field that combines visualization (and HCI), Artificial Intelligence (Deep Learning, Large Language Models), and interactive visual interfaces. Visual analytics systems visualize both raw input data and AI models' computation results, allowing users to interactively analyze the data. I extend my research to Human-AI Interaction. Specifically, my research topics include (1) designing novel visual analytics systems with AI for solving real-world problems in various domains, (2) developing novel deep learning models for understanding and forecasting various types of data, including spatial-temporal and time-series data, and (3) devising AI-powered systems to assist people in their work or behaviors.

Research Areas

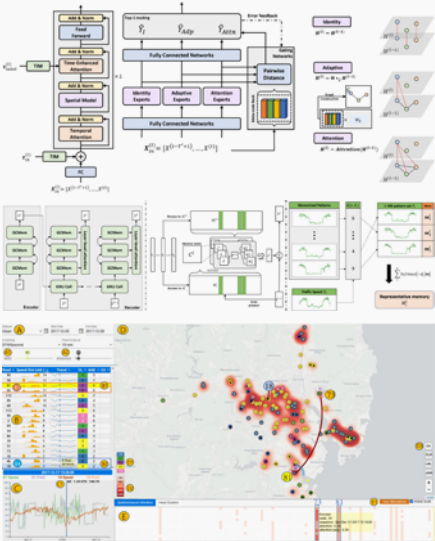
- Visualization, Human-AI Interaction, HCI
- Deep Learning, Language Models, Data Mining

Major Achievements

- Visual Analytics System for Traffic Congestion Forecasting
- User Interface Design for Preventing Impulse Purchase
- Deep Learning Models for Traffic Forecasting
- Visual Interface for GUI design with AI
- Visualization Systems for Story Generation with AI

Recent Publications

- Joohee Kim, Hyunwook Lee, Duc M. Nguyen, Minjeong Shin, Bum Chul Kwon, Sungahn Ko, and Niklas Elmqvist, "DG Comics: Semi-Automatically Authoring Graph Comics for Dynamic Graphs," IEEE VIS 24
- Hyunwook Lee and Sungahn Ko, "TESTAM: A Time-Enhanced Spatio-Temporal Attention Model with Mixture of Experts," ICLR 24
- Hwiyeon Kim, Joohee Kim, Yunha Han, Hwajung Hong, Oh-Sang Kwon, Young-Woo Park, Niklas Elmqvist, Sungahn Ko, Bum Chul Kwon, "Towards Visualization Thumbnail Designs that Entice Reading Data-driven Articles," IEEE TVCG 24
- Minjeong Shin, Joohee Kim, Yunha Han, Lexing Xie, Mitchell Whitelaw, Bum Chul Kwon, Sungahn Ko, and Niklas Elmqvist, "Roslingifier: Semi-Automated Storytelling for Animated Scatterplots," IEEE TVCG 23
- Seungmin Jin, Hyunwook Lee, Cheonbok Park, Hyeshin Chu, Yunwon Tae, Jaegul Choo, and Sungahn Ko, "A Visual Analytics System for Improving Attention-based Traffic Forecasting Models," IEEE VIS 22





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Education	▪ Ph.D.	University of North Carolina at Chapel Hill (2022)		
	▪ B.S.	Yonsei University (2009)		
Career	▪ 2009-2015	Software Engineer, Samsung Electronics, Suwon, South Korea		
	▪ 2020	Research Intern, Adobe Research, San Jose, CA, USA		
	▪ 2021	Applied Science Intern, Alexa AI at Amazon, Sunnyvale, CA, USA		
	▪ 2022-2025	Assistant Professor, UNIST AIGS/CSE, Ulsan, South Korea		
	▪ 2025-Present	Assistant Professor, POSTECH GSAI/CSE, Pohang, South Korea		

Research Overview

Language serves as a vital medium for expressing and transferring information, as well as integrating diverse sources of input. Humans, for instance, can describe their experiences—what they see, hear, and feel—through words. Conversely, they can imagine scenes, sounds, and emotions based on written descriptions. This makes language essential for tackling machine learning (ML) and artificial intelligence (AI) challenges involving multimodal inputs. In our lab, we explore a range of AI topics related to natural language processing (NLP) and multimodal learning. By addressing these challenges, we aim to develop integrated systems capable of understanding language, vision, actions, and more.

Research Areas

- Natural Language Processing
- Multimodal Learning

Major Achievements

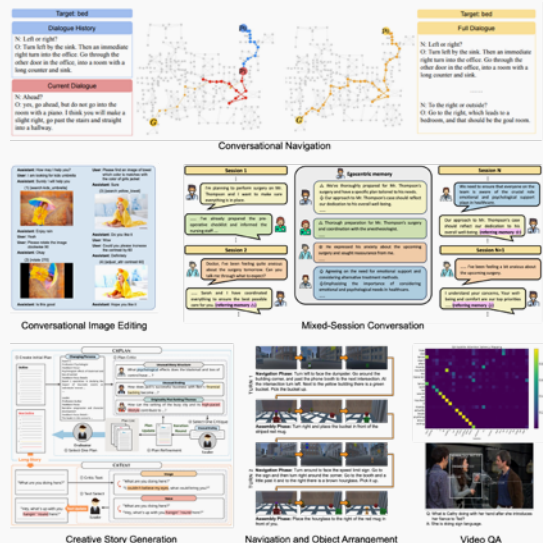
- Embodied AI
- Dialogue, Conversation
- Commonsense Reasoning
- Image/Vedio Question Answering

Honors and Awards

- Best Reviewer Awards, EMNLP 2023
- Best Short Paper Nomination, ACL 2019

Recent Publications

- Collective Critics for Creative Story Generation. Minwook Bae, and Hyoung hun Kim. Proceedings of EMNLP 2024
- Mixed-Session Conversation with Egocentric Memory. Jihyoung Jang, Taeyoung Kim, and Hyoung hun Kim. Findings of EMNLP 2024
- Conversation Chronicles: Towards Diverse Temporal and Relational Dynamics in Multi-Session Conversations, Jihyoung Jang, MinSeong Boo, and Hyoung hun Kim. Proceedings of EMNLP 2023
- CoSIIn: Commonsense Reasoning for Counterfactual Scene Imagination. Hyoung hun Kim*, Abhay Zala*, and Mohit Bansal. Proceedings of NAACL 2022
- CAISE: Conversational Agent for Image Search and Editing. Hyoung hun Kim, Doo Soon Kim, Seunghyun Yoon, Franck Dernoncourt, Trung Bui, and Mohit Bansal. Proceedings of AAAI 2022
- NDH-Full: Learning and Evaluating Navigational Agents on Full-Length Dialogue. Hyoung hun Kim, Jialu Li, and Mohit Bansal. Proceedings of EMNLP 2021
- FixMyPose: Pose Correctional Captioning and Retrieval. Hyoung hun Kim*, Abhay Zala*, Graham Burri, and Mohit Bansal. Proceedings of AAAI 2021
- ArraMon: A Joint Navigation-Assembly Instruction Interpretation Task in Dynamic Environments, Hyoung hun Kim, Abhay Zala, Graham Burri, Hao Tan, and Mohit Bansal. Findings of EMNLP 2020





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Education

▪ Ph.D.

POSTECH (2014)

▪ B.S.

POSTECH (2007)

Career

▪ 2014-2016

Post-doctoral Researcher, Ecole Normale Supérieure/Inria Paris

▪ 2016-2018

Assistant Professor, DGIST

▪ 2018-2021

Assistant Professor, POSTECH

▪ 2021-Present

Associate Professor, POSTECH

▪ Homepage (lab)

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Research Overview

The ultimate goal of our team is to build artificial intelligence models for more human-like and robust visual perception in uncontrolled environments in the real world. We particularly focus on open-set recognition, domain adaptation and generalization, robustness against adverse conditions and malicious attacks, label-efficient learning, and learning with noisy labels or biased data. To this end, we study fundamental visual recognition problems and explore relevant areas of machine learning and natural language processing.

Research Areas

- Computer Vision
- Machine Learning

Major Achievements

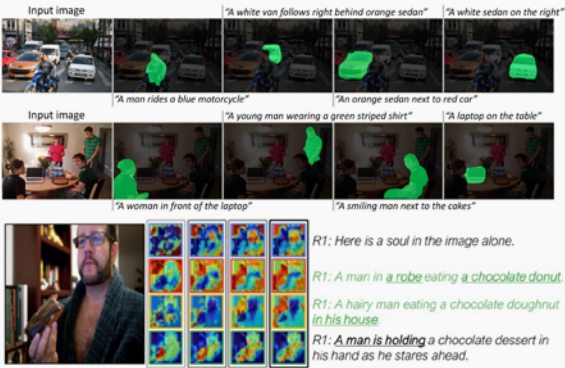
- Vision-language Multi-modal AI
- Visual Perception in Extreme Conditions
- Label-efficient Learning
- Metric Learning for Data Retrieval
- Social Activity Understanding in Video

Honors and Awards

- Best Paper Finalist, CVPR 2022
- The KCCV Sang-Uk Lee Prize, 2023
- POSTECH CSE Young Scholar Award, 2020
- IJCV Associate Editor 2021-2023
- CVPR 2022-2024, ICCV 2019-2023, ECCV 2024, NeurIPS 2023, AAAI 2024 Area Chair
- CVPR 2018, NeurIPS 2018, ICML 2022 Best Reviewer Award
- Kakao Faculty Fellowship, 2018
- POSCO AI Advisory Council Member, 2022

Recent Publications

- Seoyeon Kim, Minguk Kang, Dongwon Kim, Jaesik Park, Suha Kwak, Extending CLIP's Image-Text Alignment to Referring Image Segmentation, NAACL 2024
- Hyeonjun Lee, Sehyun Hwang, Suha Kwak, Extreme Point Supervised Instance Segmentation, CVPR 2024
- Sehyun Hwang, Sohyun Lee, Hoyoung Kim, Minhyeon Oh, Jungseul Ok, and Suha Kwak, Active Learning for Semantic Segmentation with Multi-class Label Query, NeurIPS 2023
- Dongwon Kim, Namyup Kim, Cuiling Lan, and Suha Kwak, Shatter and Gather: Learning Referring Image Segmentation with Text Supervision, ICCV 2023 (Highlight)
- Junhyeong Cho, Gilhyun Nam, Sungyeon Kim, Hunmin Yang, and Suha Kwak, PromptStyler: Prompt-driven Style Generation for Source-free Domain Generalization, ICCV 2023
- Dongwon Kim, Namyup Kim, and Suha Kwak, Improving Cross-Modal Retrieval with Set of Diverse Embeddings, CVPR 2023
- Sungyeon Kim, Boseung Jeong, and Suha Kwak, HIER: Metric Learning Beyond Class Labels via Hierarchical Regularization, CVPR 2023
- Sohyun Lee, Jaesung Rim, Boseung Jeong, Geonu Kim, Byungju Woo, Haechan Lee, Sunghyun Cho, and Suha Kwak, Human Pose Estimation in Extremely Low-Light conditions, CVPR 2023
- Namyup Kim, Dongwon Kim, Cuiling Lan, Wenjun Zeng, and Suha Kwak, ReSTR: Convolution-free Referring Image Segmentation Using Transformers, CVPR 2022
- Sohyun Lee, Taeyoung Son, and Suha Kwak, FIFO: Learning Fog-invariant Features for Foggy Scene Segmentation, CVPR 2022 (Oral, Best Paper Finalist)





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Education

▪ **Ph.D.** KAIST (2016)
 ▪ **M.S.** KAIST (2012)
 ▪ **B.S.** POSTECH (2010)

Career

▪ **2016-2018** Senior Performance Engineer, Arm Inc
 ▪ **2018-Present** Assistant Professor, POSTECH

Research Overview

Advancements in data-driven computing, particularly in artificial intelligence and big data, are presenting significant challenges to computer systems. The escalating demands for computing power and memory capacity are outpacing traditional technology scaling, necessitating substantial innovations in computer system design. Our research group specializes in pioneering architectural solutions to tackle these challenges head-on. Our ongoing projects focus on co-designing hardware and software stacks to facilitate general-purpose, low-overhead near-data processing (NDP) in CXL memory. Additionally, we are exploring the integration of storage class memory (SCM) with DRAM cache to enhance the memory capacity and performance of GPUs, particularly for resource-intensive workloads such as GPT models.

Research Areas

- Computer Architecture
- GPU Architecture
- HW/SW Co-design for AI
- Memory System
- Near-Data Processing
- Interconnection Network

Major Achievements

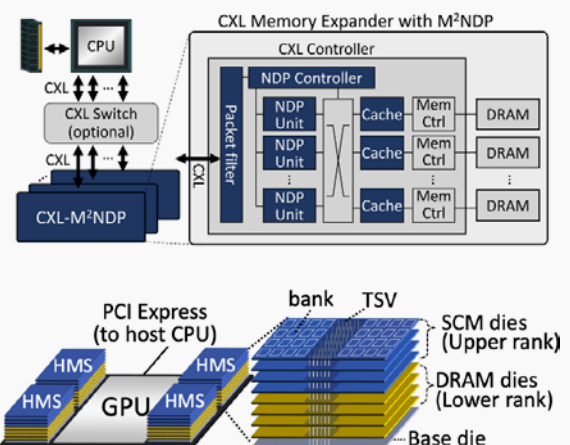
- General-purpose, low-overhead near-data processing (NDP) architecture for CXL memory
- Heterogeneous memory stack (HMS) to overcome the memory capacity wall of GPUs in executing AI and big data applications
- Compiler-integrated fast simulation framework of next-generation neural processing units (NPUs)
- Pioneering memory-centric system interconnect for CPUs and GPUs

Honors and Awards

- Best Paper Award Nomination (The 25th International Conference on Parallel Architectures and Compilation Techniques, 2016)
- Best Invention Award for Industry-Academia Cooperation Projects (SK Hynix, 2014)
- Best Paper Award (The 22nd International Conference on Parallel Architectures and Compilation Techniques, 2013)

Recent Publications

- Bandwidth-Effective DRAM Cache for GPUs with Storage-Class Memory, J. Hong et al., HPCA'24
- Dynamic Global Adaptive Routing in High-radix Networks, H. Kasan et al., ISCA'22
- TCEP: Traffic Consolidation for Energy-Proportional High-Radix Networks, G. Kim et al., In proceedings of ISCA'18
- Toward Standardized Near-Data Processing with Unrestricted Data Placement for GPUs, G. Kim et al., In proceedings of SC'17
- History-Based Arbitration for Fairness in Processor-Interconnect of NUMA Servers, W. Song et al., In proceedings of ASPLOS'17
- Contention-based Congestion Management in Large-Scale Networks, G. Kim et al., In proceedings of MICRO'16
- Automatically Exploiting Implicit Pipeline Parallelism from Multiple Dependent Kernels for GPUs, G. Kim, et al., In proceedings of PACT'16
- Accelerating Linked-list Traversal through Near-Data Processing, B. Hong et al., In proceedings of PACT'16
- Transparent Offloading and Mapping (TOM): Enabling Programmer-Transparent Near-Data Processing in GPU Systems, K. Hsieh et al., In proceedings of ISCA'16
- iPAWS : Instruction-Issue Pattern-based Adaptive Warp Scheduling for GPGPUs, M. Lee et al., In proceedings of HPCA'16
- Overcoming Far-end Congestion in Large-Scale Networks, J. Won et al., In proceedings of HPCA'15





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Education

- **Ph.D.** KAIST (2015)
- **M.S.** KAIST (2011)
- **B.S.** Sung Kyun Kwan University (2009)

Career

- **2015-2018** Postdoctoral Fellow, ANU, Australia
- **2018-2019** Lecturer, ANU, Australia
- **2019-Present** Assistant Professor, POSTECH

Research Overview

A vast amount of information is digitized and stored into various forms. Despite the collaborative effort to organize the information into structuralized forms, a large body of the stored information still remains in unstructured forms such as text and images. I structuralize the unstructured data by inferring hidden structures which cannot be directly observed from the data. In my research approach, I aim to infer the hidden structure of data by 1) extracting a common sub-structures that have been frequently appeared throughout the data 2) defining a latent variable model based on a plausible generative process of the data.

Research Areas

- Machine Learning
- Geometric Machine Learning
- Machine Learning for Science

Major Achievements

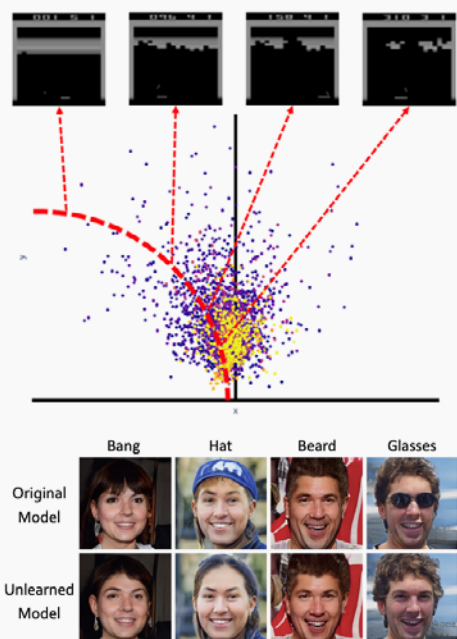
- Unlearning deep generative models
- Hyperbolic neural networks
- Constructing knowledge graph via active learning
- Analysing political discourse on social media
- Analysis the role of social media user curation system
- Context dependent conceptualisation of short text

Honors and Awards

- Best paper award, CIKM 2022 EvalRS Data Challenge, 2022
- Outstanding paper award, 한국인공지능학회 2022, 2023
- Best Dissertation Award, KAIST, 2015
- MSRA Fellow nomination award, MSRA, 2013

Recent Publications

- Saemi Moon, Seunghyuk Cho, Dongwoo Kim, Feature Unlearning for Pre-trained GANs and VAEs, AAAI Conference on Artificial Intelligence (AAAI), 2024.
- Seunghyuk Cho, Juyong Lee, Dongwoo Kim, Hyperbolic VAE via Latent Gaussian Distributions, Advances in Neural Information Processing Systems (NeurIPS), 2023.
- Minjong Lee, Dongwoo Kim, Robust Evaluation of Diffusion-Based Adversarial Purification, International Conference on Computer Vision (ICCV), 2023.
- Shouheng Li, Dongwoo Kim, Qing Wang, Local Vertex Colouring Graph Neural Network, International Conference on Machine Learning (ICML), 2023.
- Seunghyuk Cho, Juyong Lee, Jaesik Park, Dongwoo Kim, A Rotated Hyperbolic Wrapped Normal Distribution for Hierarchical Representation Learning, Advances in Neural Information Processing Systems (NeurIPS), 2022.





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Education

- **Ph.D.** Georgia Institute of Technology (2023)
- **M.S.** Korea University (2018)
- **B.S.** Korea University (2016)

Career

- **2020** Research Intern, NEC Labs America
- **2024-Present** Assistant Professor, POSTECH

Research Overview

Our research group focuses on addressing cybersecurity challenges across various interdisciplinary domains. Our primary objective is to enhance the security and robustness of a wide spectrum of computer systems, ranging from traditional software and Operating Systems to emerging systems such as Cyber-Physical Systems (e.g., drones, autonomous vehicles) and Artificial Intelligence systems. Our research methodology includes (1) the development of automated methodologies for scalable bug identification, (2) the exploration of offensive techniques to diagnose vulnerabilities in existing systems, and (3) the engineering of secure and robust systems. Ultimately, our overarching goal is to make practical impacts on the cyber-physical safety of individuals who rely on computer-based systems in their daily lives.

Research Areas

- Cyber-Physical Security
- Systems Security
- Software Testing
- Hacking

Major Achievements

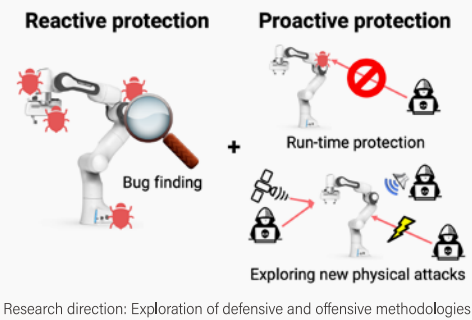
- Multiple automated bug-finding frameworks tailored for robotic systems, autonomous driving logic, operating systems, and software code repositories
- Over 250 reported bugs in widely-used computer systems

Honors and Awards

- NSA Codebreaker Challenge High Performer, NSA, 2021
- DEF CON CTF Finals 8th place (Team r00timentary), 2019

Recent Publications

- Seulbae Kim, and Taesoo Kim, "RoboFuzz: Fuzzing Robotic Systems over Robot Operating System (ROS) for Finding Correctness Bugs", ESEC/FSE 2022
- Seulbae Kim, Major Liu, Junghwan Rhee, Yuseok Jeon, Yonghwi Kwon, and Chung Hwan Kim, "DriveFuzz: Discovering Autonomous Driving Bugs through Driving Quality-Guided Fuzzing", CCS 2022
- Seunghoon Woo, Sunghan Park, Seulbae Kim, Heejo Lee, and Hakjoo Oh, "CENTRIS: A Precise and Scalable Approach for Identifying Modified Open-Source Software Reuse", ICSE 2021
- Seulbae Kim, Meng Xu, Sanidhya Kashyap, Jungyeon Yoon, Wen Xu, and Taesoo Kim, "Finding Semantic Bugs in File Systems with an Extensible Fuzzing Framework", SOSP 2019
- Seulbae Kim, Seunghoon Woo, Heejo Lee and Hakjoo Oh, "VUDDY: A Scalable Approach for Vulnerable Code Clone Discovery", S&P 2017



Research direction: Exploration of defensive and offensive methodologies



Examples of safety-critical logic bugs found in cyber-physical systems



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Education	▪ Ph.D. University of Wisconsin - Madison (2017) ▪ M.S. KAIST (2010) ▪ B.S. Sungkyunkwan University (2008)	
Career	▪ 2017-2018 Researcher, NEC Labs., America ▪ 2018-2023 Assistant Professor, University of Texas at Arlington ▪ 2020-2023 Assistant Professor, POSTECH ▪ 2023-Present Associate Professor, POSTECH	

Research Overview

Dr. Won Hwa Kim's research is focused on various topics in Machine Learning, Computer Vision and Medical Imaging. On the theoretical side, he is particularly interested in applied harmonic analysis in non-Euclidean spaces (e.g., signal processing on graphs) and stochastic process (e.g., longitudinal analysis) to develop efficient parametric Deep Learning frameworks. On the application side, his research is mainly focused on analysis of medical images and image-derived measures to facilitate understandings of various factors for disease-specific variations and progression especially for neurodegenerative diseases such as Alzheimer's Disease (AD).

Research Areas

- Medical Imaging
- Machine Learning
- Computer Vision

Major Achievements

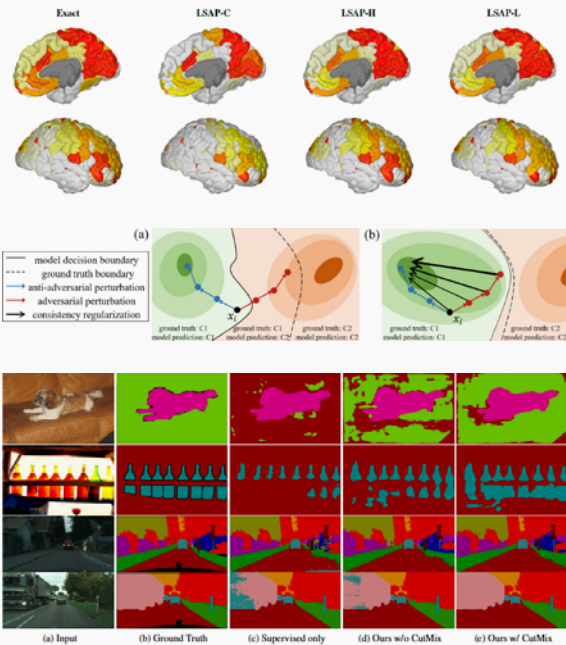
- Identifying regional changes in the brain with (preclinical) Alzheimer's Disease (AD)
- Graph foundation model for graph generation
- Multi-modal brain image analysis for AD
- Spatio-temporal analysis for AD progression

Honors and Awards

- 2 Excellence Award for Outstanding Papers, GSAI BK21, 2024
- Samsung Humantech Paper Award, Samsung, 2023
- 3 Outstanding Paper Awards, IPIU, 2023
- NSF IIS Research Initiation Initiative (CRII), NSF, 2020
- Rising STARs Award, University of Texas System, 2018

Recent Publications

- Yujee Song, Donghyun Lee, Rui Meng, Won Hwa Kim, "Decoupled Marked Temporal Point Process using Neural Ordinary Differential Equations", International Conference on Representation Learning (ICLR), 2024.
- Jaeyoon Sim, Sooyeon Jeon, Injun Choi, Guorong Wu, Won Hwa Kim, "Learning to Approximate Adaptive Kernel Convolution on Graphs", AAAI Conference on Artificial Intelligence (AAAI), 2024.
- Hyuna Cho, Minjae Jeong, Sooyeon Jeon, Sungsoo Ahn, Won Hwa Kim, "Multi-resolution Spectral Coherence for Graph Generation with Score-based Diffusion", Neural Information Processing Systems (NeurIPS), 2023.
- Hyuna Cho, Guorong Wu, Won Hwa Kim, "Mixing Temporal Graphs with MLP for Longitudinal Brain Connectome Analysis", Medical Image Computing and Computer Assisted Intervention (MICCAI), 2023. [Oral Presentation]
- Rui Meng, Fan Yang, Won Hwa Kim, "Dynamic Covariance Estimation via Predictive Wishart Process with an Application on Brain Connectivity Estimation", Computational Statistics & Data Analysis (CSDA), 2023.





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Education	▪ Ph.D. University of North Carolina at Chapel Hill (2017) ▪ M.S. KAIST (2011) ▪ B.S. KAIST (2009)	
Career	▪ 2015 Research Intern, IBM Almaden Research Center ▪ 2017-2021 Research Assistant Professor, Vanderbilt University ▪ 2021-2024 Assistant Professor, UNIST ▪ 2024-Present Assistant Professor, POSTECH	

Research Overview

Our research team is committed to in-depth exploration of the inherent geometric characteristics within 3D objects by extensively navigating theoretical frameworks across computer science sub-disciplines such as computer vision, computer graphics, and machine learning. Our central aim is to significantly enhance the collective understanding of 3D objects, carrying substantial implications across a wide array of fields. In the realm of practical application, we prioritize the meticulous examination of brain shapes, recognizing their nuanced and intricate nature. Our overarching goal is to lead the charge in developing pioneering techniques and algorithms adept at tackling multifaceted challenges in 3D shape analysis, with a specific focus on providing robust support within clinical contexts.

Research Areas

- Medical Imaging
- Computer Vision
- Computer Graphics

Major Achievements

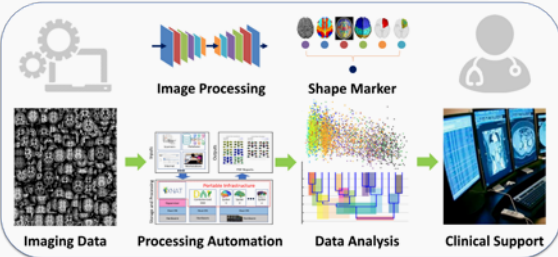
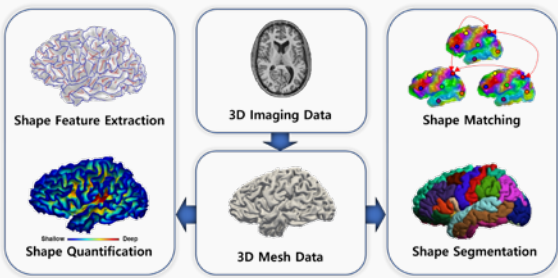
- Spherical harmonics-based shape data processing
- Deformable spherical registration for shape matching
- Shape skeletonization and folding-adaptive shape quantification for brain structural data analysis

Honors and Awards

- Travel Award, MICCAI, 2019
- Best Paper Award Finalist, ISBI, 2016

Recent Publications

- Ha, S., Lyu, I., "SPHARM-Net: Spherical Harmonics-based Convolution for Cortical Parcellation", IEEE Transactions on Medical Imaging, 2022.
- Lyu, I., Bao, S., Hao, L., Yao, J., Miller, J., Voorhies, W., Taylor, W., Bunge, S., Weiner, K., Landman, B., "Labeling Lateral Prefrontal Sulci using Spherical Data Augmentation and Context-aware Training", NeuroImage, 2021.
- Parvathaneni, P., Bao, S., Nath, V., Woodward, N., Claassen, D., Cascio, C., Zald, D., Huo, Y., Landman, B., Lyu, I., "Cortical Surface Parcellation using Spherical Convolutional Neural Networks", MICCAI, 2019. (Travel award)
- Lyu, I., Kang, H., Woodward, N., Styner, M., Landman, B., "Hierarchical Spherical Deformation for Cortical Surface Registration", Medical Image Analysis, 2019.
- Lyu, I., Kim, S., Girault, J., Gilmore, J., Styner, M., "A Cortical Shape-Adaptive Approach to Local Gyrfication Index", Medical Image Analysis, 2018.
- Lyu, I., Kim, S., Woodward, N., Styner, M., Landman, B., "TRACE: A Topological Graph Representation for Automatic Sulcal Curve Extraction", IEEE Transactions on Medical Imaging, 2018.
- Lyu, I., Styner, M., Landman, B., "Hierarchical Spherical Deformation for Shape Correspondence", MICCAI, 2018. (Oral)





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Education

- Ph.D. University of Pennsylvania (2021)
- M.S. Seoul National University (2012)
- B.S. Seoul National University (2010)

Career

- 2020 Research Intern, Google
- 2021-2023 Postdoctoral Researcher, Georgia Institute of Technology
- 2023-Present Assistant Professor, POSTECH

Research Overview

As AI/ML systems closely interact with humans in daily lives, we have to consider their trustworthiness. To this end, our research interest focuses on designing trustworthy AI/ML systems by understanding from theory to implementation and by considering practical applications to computer security, computer vision, natural language processing, and cyber-physical systems, including robotics. In particular, our goal is to design learning methods that provide theoretical guarantees on the trustworthiness of learned models in the lens of learning theory. We have explored problems including uncertainty quantification, conformal prediction, and adversarial learning; and we are excited about problems on machine unlearning and fairness/privacy in machine learning. For learning trustworthy models, we first understand (even for fun) the state-of-the-art AI/ML models and learning algorithms, including object detectors, large language models (LLMs), and drones, to find trustworthiness issues. We aim to explore problems including adversarial attacks on ML models or algorithms, the hallucination problem of LLMs, and security and privacy analysis in LLMs.

Research Areas

- Machine Learning
- Trustworthy Machine Learning
- Computer Security

Major Achievements

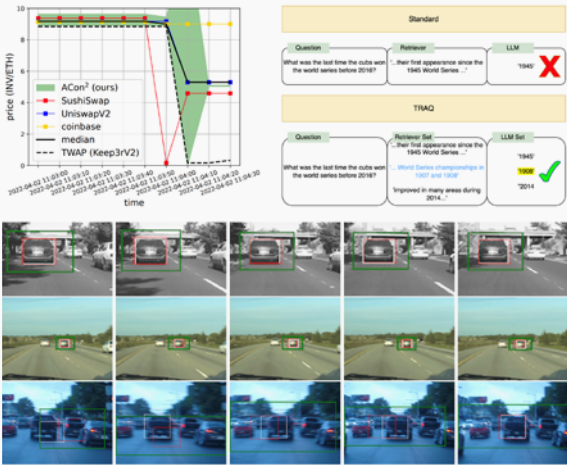
- Uncertainty learning and conformal prediction with correctness guarantees under distribution shifts and adversarial manipulations
- Covariate shift and out-of-distribution detection

Honors and Awards

- Best Paper Award, ICML 2023 TEACH Workshop
- Best Paper Award finalist, ICCPS, 2023
- Best Reviewer Awards, NeurIPS, 2021
- Best Paper Award, 사이버안보 논문 공모전, 2018
- Distinguished M.S. Dissertation Award, SNU, 2012

Recent Publications

- W. Si, S. Park, I. Lee, E. Dobriban, O. Bastani, "PAC Prediction Sets Under Label Shift", ICLR 2024
- S. Li, S. Park, I. Lee, O. Bastani, "TRAC: Trustworthy Retrieval Augmented Chatbot", ICML TEACH Workshop 2023
- W. Si, S. Li, S. Park, I. Lee, and O. Bastani, "Angelic Patches for Improving Third-Party Object Detector Performance", CVPR 2023
- S. Park, O. Bastani, and T. Kim, "ACon2: Adaptive Conformal Consensus for Provable Blockchain Oracles", Security 2023
- R. Kaur, K. Sridhar, S. Park, Y. Yang, S. Jha, A. Roy, O. Sokolsky, and I. Lee, "CODiT: Conformal Out-of-distribution Detection in Time-series Data for Cyber-Physical Systems", ICCPS 2023
- S. Park, E. Dobriban, I. Lee, and O. Bastani, "PAC Prediction Sets for Meta-Learning", NeurIPS 2022
- S. Jang, S. Park, I. Lee, and O. Bastani, "Sequential Covariate Shift Detection Using Classifier Two-Sample Tests", ICML 2022
- S. Park, E. Dobriban, I. Lee, and O. Bastani, "PAC Prediction Sets Under Covariate Shift", ICLR 2022
- R. Kaur, S. Jha, A. Roy, S. Park, E. Dobriban, O. Sokolsky, and I. Lee, "IDECODE: In-distribution Equivariance for Conformal Out-of-distribution Detection", AAAI 2022
- S. Park, S. Li, I. Lee, and O. Bastani, "PAC Confidence Predictions for Deep Neural Network Classifiers", ICLR 2021





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Education	- Ph.D. Seoul National University (2014) - B.S. Yonsei University (2008)	
Career	2014-2016 Post-doctoral Fellow, University of North Carolina 2016-2017 Post-doctoral Fellow, SRI International 2017-2022 Assistant Professor, DGIST 2022-2026 Associate Professor, DGIST 2026-Present Associate Professor, POSTECH	

Research Overview

The ultimate goal of our research is to develop reliable, generalizable, and clinically meaningful artificial intelligence models for understanding and analyzing complex medical data in real-world healthcare environments. We particularly focus on medical image and pathology image analysis, multimodal learning across imaging, clinical, and genomic data, and foundation model-based approaches that can effectively operate under limited annotations, domain shifts, and heterogeneous data distributions across institutions. To achieve this goal, we study fundamental problems in medical visual understanding, including representation learning, weakly supervised and label-efficient learning, domain generalization, and explainable AI, while exploring relevant advances in machine learning and multimodal large-scale models to enable robust and scalable medical AI systems.

Research Areas

- Medical AI
- Computer Vision

Major Achievements

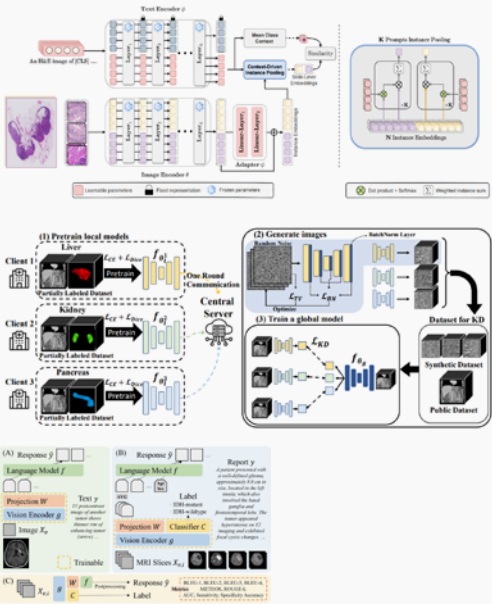
- Label-efficient Learning
- Robust & Generalizable Medical AI
- Explainable & Evidence-grounded Medical AI
- Generative AI for Medical Training & Simulation

Honors and Awards

- Local Committee Chair, MICCAI 2025
- Fulbright Visiting Scholarship, 2024
- DGIST Outstanding Academic Award, 2023
- DGIST Best Education Award, 2020
- MICCAI 2023, 2024, 2026 Area Chair
- 1st Winner at MR Brain Segmentation (MRBrainS) MICCAI Challenge, 2018

Recent Publications

- Jaehoon Jeong, Yi Hu, Soopil Kim, Jongseong Jang, Soonyoung Lee, Sang Hyun Park, "IVAAN: Instance-level Vision-Language Alignment via Attribute-Guided Text Prompts Generation for Nuclei Analysis," CVPR, 2026
- Myeongkyun Kang, Philip Chikontwe, Soopil Kim, Kyong Hwan Jin, Ehsan Adeli, Kilian M. Pohl, Sang Hyun Park, "Efficient One-shot Federated Learning on Medical Data using Knowledge Distillation with Image Synthesis and Client Model Adaptation," Medical Image Analysis, 2025
- Soopil Kim, Heejung Park, Philip Chikontwe, Myeongkyun Kang, Kyong Hwan Jin, Ehsan Adeli, Kilian M. Pohl, Sang Hyun Park, "Communication Efficient Federated Learning for Multi-Organ Segmentation via Knowledge Distillation with Image Synthesis", IEEE Transactions on Medical Imaging, 2025
- Eojin Jang, Myeongkyun Kang, Soopil Kim, Min Sagong, Sang Hyun Park, "Revisiting Masked Image Modeling with Standardized Color Space for Domain Generalized Fundus Photography Classification," MICCAI, 2025
- Philip Chikontwe, Meejeong Kim, Jaehoon Jeong, Hyun Jung Sung, Heounjeong Go, Soo Jeong Nam*, Sang Hyun Park*, "FR-MIL: Distribution Re-calibration based Multiple Instance Learning with Transformer for Whole Slide Image Classification," IEEE Transactions on Medical Imaging, 2024





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Education

- **Ph.D.** Carnegie-Mellon University (2005)
- **M.S.** KAIST (1998)
- **B.S.** KAIST (1996)

Career

- **2006-Present** Computer Science and Engineering Department, POSTECH

Research Overview

Our research goal is to build a deductive verification system based on separation logic that can be applied to verifying real-world programs. On the theoretical side, we are refining the proof theory for separation logic which is the basis for our deductive verification system. On the practical side, we are building a verification system that covers both C programs and Java programs.

Recent Publications

- A Proof System for Separation Logic with Magic Wand. Wonyeol Lee and Sungwoo Park. POPL 2014.
- A Theorem Prover for Boolean BI. Jonghyun Park, Jeongbong Seo, and Sungwoo Park. POPL 2013.

Research Areas

- Separation logic
- Type theory
- Logic in computer science

Major Achievements

- A Proof System for Separation Logic with Magic Wand
- A Theorem Prover for Boolean BI
- Judgmental Subtyping Systems with Intersection Types and Modal Types
- Contractive Signatures with Recursive Types, Type Parameters, and Abstract Types



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Education

▪ **Ph.D.** Seoul National University (2020)
 ▪ **M.S.** POSTECH (2015)
 ▪ **B.S.** POSTECH (2014)

Career

▪ **2018** Research Intern, Facebook, Mobile Vision
 ▪ **2019-2020** Post Doctoral Researcher, Seoul National University
 ▪ **2020-Present** Assistant Professor, POSTECH

Research Overview

Deep learning-based algorithms show excellent performance in various fields such as image processing, natural language recognition, and recommendation system. However, their utilization is limited due to realistic constraints, e.g., computation cost, power restriction, and delayed latency. Our goal is to maximize the usage of deep learning-based algorithms by easing the constraints through HW/SW co-design and optimization. We focus on developing advanced optimization algorithms, e.g., quantization, pruning, and architecture search, to eliminate the redundancy of deep neural networks. In addition, we try to design a specialized hardware accelerator to maximize the benefit of the optimization methods. Eventually, our team aims to automate system optimization so that everyone can enjoy the benefits of optimization.

Research Areas

- Quantization & Pruning
- HW/SW co-design
- AutoML for Optimization

Major Achievements

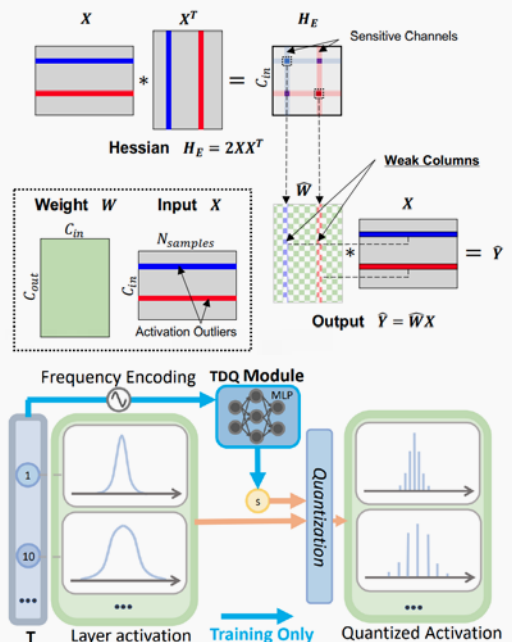
- Quantization for large language model
- Acceleration for diffusion model
- Deploy deep learning applications on edge devices
- Optimized neural architecture design for vision tasks

Honors and Awards

- Naver Ph.D. Fellowship, 2017
- Best dissertation award, Seoul National University, CSE, 2020
- Award for Outstanding Invention on Academic Research Project, SK Hynix, 2023
- Humantech Paper Award, Samsung, 2024

Recent Publications

- Lee, Changhun, Jungyu Jin, Taesu Kim, Hyungjun Kim, and Eunhyeok Park. "OWQ: Outlier-Aware Weight Quantization for Efficient Fine-Tuning and Inference of Large Language Models", AAAI, 2024.
- So, Junhyuk, Jungwon Lee, Daehyun Ahn, Hyungjun Kim, and Eunhyeok Park. "Temporal dynamic quantization for diffusion models." NeurIPS, 2024.
- Yun, Yugyoung, and Eunhyeok Park. "Fast Performance Prediction for Efficient Distributed DNN Training." IEEE Computer Architecture Letters, 2023.
- Shin, Juncheol, Junhyuk So, Sein Park, Seungyeop Kang, Sungjoo Yoo, and Eunhyeok Park. "NIPQ: Noise Proxy-Based Integrated Pseudo-Quantization." CVPR, 2023.
- Park, Sein, Yeongsang Jang, and Eunhyeok Park. "Symmetry Regularization and Saturating Nonlinearity for Robust Quantization." ECCV, 2022.





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Education	▪ Ph.D.	Seoul National University (2019)	
	▪ B.S.	Seoul National University (2011)	
Career	▪ 2019-2022	Postdoctoral Research Associate and Lecturer, ETH Zurich	
	▪ 2022-Present	Assistant Professor, POSTECH	

Research Overview

The overarching goal of my research is to build fast, secure, and cost-effective computing systems that will have positive impact on human lives. Modern computing systems store and process unprecedented amounts of data, and how to efficiently deal with these large amounts of data significantly affects our lives. I have focused on optimizing memory and storage systems that (i) bottleneck the performance and energy efficiency of many important data-intensive applications and (ii) store a variety of security-sensitive information. As a key research direction, I am especially interested in cross-layer optimizations based on deep understandings of both high-level application requirements and low-level device characteristics.

Research Areas

- Computer Architecture
- System Software
- Memory Systems
- Storage Systems
- System Security

Major Achievements

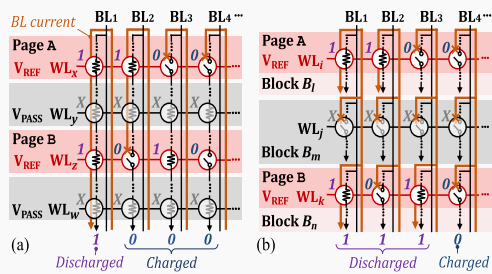
- In-storage processing systems to improve the performance and energy efficiency of data-intensive applications
- Cross-layer optimizations to improve the performance of modern NAND flash-based storage systems
- Efficient data sanitization for modern NAND flash-based storage systems
- Machine learning-based storage optimizations (ransomware detection, data reduction, and data placement)

Honors and Awards

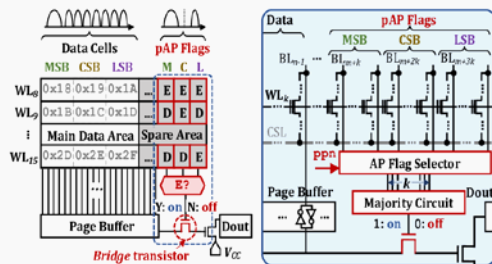
- Postdoctoral Research Fellowship, NRF Korea, 2020
- Outstanding Ph.D. Dissertation Award in CSE, SNU CSE, 2019
- Naver Ph.D. Fellowship, Naver Corp., 2017
- The 23rd Samsung Humantech Paper Award - Encouragement Prize, Samsung, 2017.
- Best Paper Award Nomination, the 53rd Design Automation Conference, 2016.
- The 22nd Samsung Humantech Paper Award - Bronze Prize, Samsung, 2016.
- Samsung Electronics Ph.D. Fellowship, Samsung Electronics, 2013.

Recent Publications

- S. Lee et al, "AERO: Adaptive Erase Operation for Improving Lifetime and Performance of Modern NAND Flash-Based SSDs," ASPLOS 2024.
- M. Chun and J. Lee et al, "RiF: Improving Read Performance of Modern SSDs Using an On-Die Early-Retry Engine," HPCA 2024.
- J. Park et al, "Flash-Cosmos: In-Flash Bitwise Operations Using Inherent Computation Capability of NAND Flash Memory," MICRO 2022.
- J. Park and J. Kim et al, "DeepSketch: A New Machine Learning-Based Reference Search Technique for Post-Deduplication Delta Compression," USENIX FAST, 2022.
- J. Park et al, "Reducing Solid-State Drive Read Latency by Optimizing Read-Retry," ASPLOS 2021.
- M. Kim and J. Park et al, "Evanesco: Architectural Support for Efficient Data Sanitization in Modern Flash-Based Storage Systems," ASPLOS 2020.



In-flash computation mechanism for bulk bitwise (a) AND and (b) OR operations



NAND flash architecture for efficient data sanitization



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Education

▪ **Ph.D.** University of Illinois at Urbana-Champaign (2014)
 ▪ **B.S.** KAIST (2004)

Career

▪ **2014-2015** Postdoctoral Fellow, School of Computer Science, Carnegie Mellon University, USA
 ▪ **2015-2016** Postdoctoral Fellow, Computer Science Laboratory, SRI International, USA.
 ▪ **2016-Present** Assistant/Associate Professor, Dept. of Computer Science & Engineering, POSTECH.

Research Overview

Our research group aims to develop novel and automated techniques to ensure the reliability, safety, and security of software systems. For example, cyber-physical systems, such as self-driving cars and drones, must meet stringent safety requirements, and AI-based systems, including deep neural networks, should be trustworthy. Errors or bugs in such systems can cause enormous damage, even human fatalities. Our group is developing model checking algorithms and tools for verifying the safety requirements of cyber-physical systems, based on automated reasoning algorithms. Our techniques can automatically verify complex logical properties, specified in signal temporal logic, of cyber-physical systems.

Research Areas

- Software Verification
- Formal Methods
- Automated Reasoning
- Computational Logic

Major Achievements

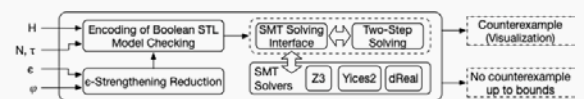
- Model checking algorithms of signal temporal logic properties for cyber-physical systems
- Symbolic model checking algorithms for concurrent systems specified in rewriting logic
- Formal analysis techniques of virtually synchronous cyber-physical systems

Honors and Awards

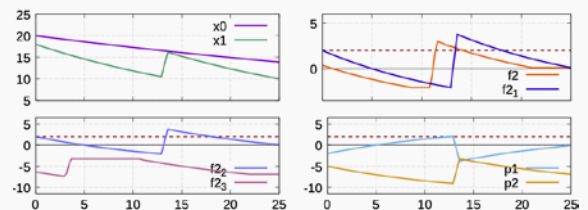
- Best Paper Award, FACS (2017)
- Feng Chen Memorial Award, UIUC (2013)
- Chirag Foundation Fellowship, UIUC (2007)

Recent Publications

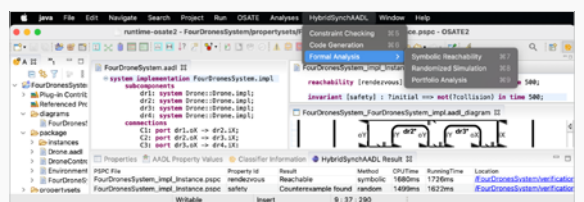
- G. Yu, S. Chae, K. Bae, and S. Moon. Formal Specification of Trusted Execution Environment APIs. International Conference on Fundamental Approaches to Software Engineering (FASE), 2024
- G. Yu, J. Lee, and K. Bae. STLmc: Robust STL Model Checking of Hybrid Systems using SMT. International Conference on Computer Aided Verification (CAV), 2022
- J. Lee, G. Yu, and K. Bae. Efficient SMT-Based Model Checking for Signal Temporal Logic. IEEE/ACM International Conference on Automated Software Engineering (ASE), 2021
- K. Bae and P. Olveczky. Generalized Formal Design Pattern for Virtually Synchronous Multirate Cyber-Physical Systems. ACM SIGBED International Conference on Embedded Software (EMSOFT), 2021
- J. Lee, S. Kim, K. Bae, and P. Olveczky. HybridSynchAADL: Modeling and Formal Analysis of Virtually Synchronous CPSs in AADL. Olveczky International Conference on Computer Aided Verification (CAV), 2021
- K. Bae and J. Lee. Bounded Model Checking of Signal Temporal Logic Properties Using Syntactic Separation. ACM SIGPLAN Symposium on Principles of Programming Languages (POPL), 2019



Overview of CPS model checking algorithm



Synthesis of counterexample signals



The HybridSynchAADL framework



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Education	▪ Ph.D. KAIST (2019) ▪ M.S. KAIST (2015) ▪ B.S. Sogang University (2013)	
Career	▪ 2017 Research Intern - Microsoft Research Asia ▪ 2018 Research Intern - NVIDIA ▪ 2019-2020 Post-doctoral Researcher, KAIST ▪ 2020-2021 Post-doctoral Researcher, Princeton University ▪ 2021-Present Assistant Professor, POSTECH	

Research Overview

Previous paradigms in visual computing often analyzed visual data in isolation from its acquisition. Baek's group studies the end-to-end pipeline of visual computing from sensing to understanding. Our research, situated at the intersection of computer graphics, vision, AI, and optics, focuses on capturing, modeling, and analyzing high-dimensional visual data originating from complex interplays between light, material appearance, and geometry. Our work has applications in mobile cameras, robots, autonomous vehicles, VR/AR displays, and scientific instruments.

Research Areas

- Computer Graphics & Vision
- Computational Imaging & Display
- Machine Learning & Optimization
- Computational Optics

Major Achievements

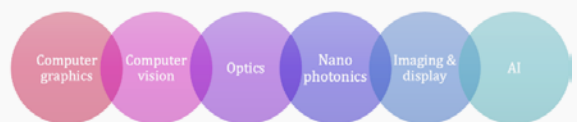
- Learned Computational Imaging
- Graphics and Vision with Light Waves
- Holographic display for Virtual and Augmented Reality
- Wave-based LiDAR for Autonomous Vehicles
- Compact High-performance Imaging

Honors and Awards

- Frontiers of Science Award, International Congress of Basic Science, 2023
- Top 30 ideas in optics, Optica, 2021
- S-OIL Outstanding Ph.D. Thesis, 2020
- KAIST Outstanding Ph.D. Thesis, 2019
- SIGGRAPH Asia Doctoral Consortium, 2018
- KCGS Young Graphics Researcher Award, 2017
- Microsoft Research Asia Ph.D. Fellowship, 2017
- Naver Ph.D. Fellowship, 2016
- KAIST Outstanding M.S. Thesis, 2015
- ACCV Best Application Paper, 2014
- ACCV Best Demo, 2014

Recent Publications

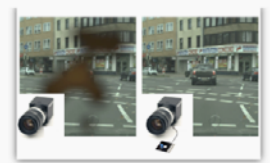
- 360° Structured Light with Learned Metasurfaces, Nature Photonics 2024
- Neural inverse rendering, CVPR 2024
- Display for 3D reconstruction, CVPR 2024
- Hyperspectral 3D imaging with dispersion, CVPR 2024
- Spectro-polarimetric dataset, CVPR 2024
- Polarization LiDAR, CVPR 2024
- Learned ISP, CVPR 2024
- Novel view synthesis, CVPR 2024
- Neural Spectro-polarimetric Fields, SIGGRAPH Asia 2023
- 3D Seeing through Fog, CVPR 2023



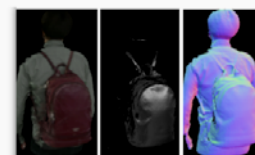
Representation



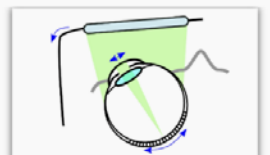
Extreme vision



Reconstruction



Holography





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Education	▪ Ph.D. Georgia Institute of Technology (1996) ▪ M.S. Hanyang University (1987)	▪ B.S. Hanyang University (1985)
Career	▪ 1998-Present Professor - Department of Computer Science Engineering, POSTECH, Pohang, Korea ▪ 1997-1998 Research Fellow - Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor, Michigan, USA ▪ 1996-1997 Researcher - School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, USA ▪ 1993-1996 Research Assistant - School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, USA ▪ 1990-1993 Assistant Professor - Department of Computer Science and Engineering, Chung-Cheong College ▪ 1988-1990 Research Engineer - Central Research Center, LG Electronics Inc., Seoul, Korea	

Research Overview

We focus on a comprehensive exploration of AI and IoT, spanning a wide range of areas from sensor data collection to the application of AI on collected time-series data. We are actively engaged in the following specific research topics: i) Integration of IoT Sensor Data and AI (AIoT), ii) Wireless Network-based Indoor Positioning System (IPS), iii) Overall Protocol Design for Wireless Networks (WLAN, WPAN, LPWAN, etc.) and iv) Voice AI. Our recent research projects particularly focus on venturing into new challenges within the field of Voice AI. We actively explore and advance areas such as speaker verification and voice conversion, with the goal of making significant contributions to the ongoing development of Voice AI technologies.

Research Areas

- AI + Internet of Things (AIoT)
- Indoor Positioning System (IPS)
- Wireless Networks
- Speaker Verification
- Voice Conversion

Major Achievements

- Detection and classification of equipment failures through sensor data
- Human Motion Detection using Wireless Signal
- Applications leveraging the Indoor Positioning System (IPS) across diverse domains including disaster response, logistics, and security
- Designing MAC protocols for WLAN and WPAN, encompassing features such as multicast and full-duplex communication.
- Voice conversion systems that ensure content preservation and speaker alteration

Honors and Awards

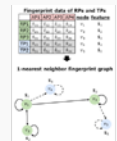
- People's Choice Award for Demos, ACM UbiComp 2023
- Best Paper Awards, KICS 2017 & 2022
- 2nd Place Winner, K-ICT NET Challenge Camp Season 3, 2016
- Best Paper Awards, KIISE 2008, 2009, & 2011

Recent Publications

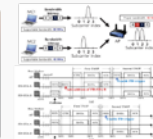
- Jiha Kim, Younho Nam, Jungeun Lee, Young-Joo Suh, and Inseok Hwang, "ProxiFit: Proximity Magnetic Sensing using a Single Commodity Mobile toward Holistic Weight Exercise Monitoring," PACM IMWUT, Oct. 2023
- Dongdeok Kim and Young-Joo Suh, "GConvLoc: WiFi Fingerprinting-Based Indoor Localization using Graph Convolutional Networks," IEICE Transactions on Information and Systems, Jan. 2023
- Jaegook Lee, Jio Gim, Young Deok Park, and Young-Joo Suh, "Recycling sampling timing offset of Wi-Fi for estimating multiple ToFs of superimposed signal," IEEE Communications Letters, Nov. 2021
- Hyeongwoo Jo, Hyeongtae Ahn, Eunhyun Kim, and Young-Joo Suh, "FDCR: A Full-Duplex Collision Resolution Scheme for Next-Generation Wireless LANs," IEEE Communications Letters, Nov. 2021
- Young Deok Park, Seung-Hyun Jeong, Seokseong Jeon, and Young-Joo Suh, "WiderCast: Enabling Wider Bandwidth for Wireless Multicast over IEEE 802.11ac WLANs," IEEE Transactions on Wireless Communications, Feb. 2020
- Hyeongtae Ahn, Young Deok Park, Dongwan Kim, and Young-Joo Suh, "A Full-duplex MAC Protocol based on Buffer Status Report for Successive Full-duplex Link Setup," IEEE Communications Letters, vol. 23, no. 9, pp. 1506-1509, Sep. 2019
- Young Deok Park, Seokseong Jeon, Jae-Pil Jeong, and Young-Joo Suh, "FlexVi: PHY Aided Flexible Multicast for Video Streaming over IEEE 802.11 WLANs," IEEE Transactions on Mobile Computing, Jun. 2019



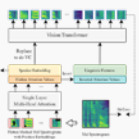
AIoT



Indoor Positioning System



Wireless Networks



Voice AI



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Education

▪ Ph.D. POSTECH (2018)
▪ M.S. Ewha Womans University (2010)
▪ B.S. Ewha Womans University (2008)

Career

▪ 2018-2019 Postdoctoral Researcher, SNU
▪ 2019-2021 Researcher, ETRI
▪ 2021-2024 Assistant Professor, GIST
▪ 2024-2025 Associate Professor, GIST
▪ 2025-Present Assistant Professor, POSTECH

▪ Homepage (lab)

http://cvlab.postech.ac.kr

Research Overview

We design intelligent systems that can perceive, understand, and reason about visual information in conjunction with natural language. Our research spans a broad range of topics, including visual tracking, object detection, semantic segmentation, video understanding, and vision-language multi-modal learning. A central focus of our work is developing methods that learn from limited or no human supervision, aiming to reduce costly manual annotations and minimize human-induced biases. More recently, we have been exploring trustworthy AI, with particular attention to interpretability, reliability, and robustness. Ultimately, we strive to build AI systems that are not only scalable and efficient, but also safe, responsible, and impactful in real-world applications.

Research Areas

- Computer Vision
- Machine Learning

Major Achievements

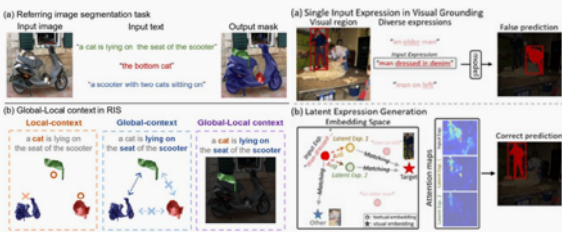
- Label-efficient Learning
- Vision-language Multi-modal Learning
- Adversarial Attack & Immunization
- Video Understanding
- Segmentation, Detection, Tracking

Honors and Awards

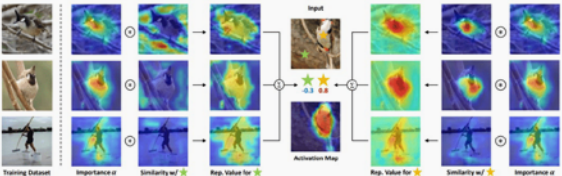
- CVPR 2024-2025, ICCV 2025, NeurIPS 2025, WACV 2025 Area Chair
- ICCV 2021 Outstanding Reviewer
- Qualcomm-POSTECH Innovation Award 2014

Recent Publications

- Seonghoon Yu, Junbeom Hong, Joonseok Lee, Jeany Son, Latent Expression Generation for Referring Image Segmentation and Grounding, ICCV 2025
- Hyung Rok Jung*, Daneul Kim*, Seunggyun Lim, Jeany Son+, Jonghyun Choi+, Online Generic Event Boundary Detection, ICCV 2025
- Chanhui Lee, Yeonghwan Song, Jeany Son, Data-free Universal Adversarial Perturbation with Pseudo-semantic Prior, CVPR 2025
- Seonghoon Yu, Paul Hongsuck Seo+, Jeany Son+, Pseudo-RIS: Distinctive Pseudo-supervision Generation for Referring Image Segmentation, ECCV 2024
- Yeonghwan Song, Seokwoo Jang, Dina Katabi, Jeany Son, Unsupervised Object Localization with Representer Point Selection, ICCV 2023
- Seonghoon Yu, Paul Hongsuck Seo, Jeany Son, Zero-shot Referring Image Segmentation with Global-Local Context Features, CVPR 2023
- Jeany Son, Contrastive Learning for Space-Time Correspondences via Self-cycle Consistency, CVPR 2022



Multi-modal Understanding for Referring Image Segmentation



Explorable Unsupervised Object Localization



Image Immunization for Diffusion Model



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Education	▪ Ph.D.	University of Southern California (1999)	
	▪ M.S.	Seoul National University (1992)	
	▪ B.S.	Seoul National University (1990)	
Career	▪ 2005-Present	Professor at CSE, POSTECH, Korea	
	▪ 2011-2012	Courtesy Associate Professor at Univ. of Florida, Gainesville, FL, USA (on sabbatical leave)	
	▪ 2015-2018	Head, Dept. of CSE, POSTECH, Korea	
	▪ 2016-2017	Vice President, Korean Institute of Information Scientists and Engineers	
	▪ 2016-2019	Review Board member, National Research Foundation of Korea	

Research Overview

We are aiming to research and develop innovative media computing & networking technologies for advanced media services including video streaming, 3D game, 360 VR (Virtual Reality) video, AR (Augmented Reality), MR(Mixed Reality) and XR(eXtended Reality) Hybrid P2P blockchain network, etc. Our research interest includes media computing, multimedia networking, and wireless/wired networks necessary to effectively support real-time advanced media applications.

Research Areas

- Hybrid Scalable P2P Blockchain
- Immersive 360 video VR (Virtual Reality) / AR (Augmented Reality) / MR (Mixed Reality) / XR (eXtended Reality) streaming
- Server & Network-assisted video streaming systems (HAS / DASH, MMT, SAND)
- Content Centric Networking / Information Centric Network
- AI-based Caching system / Scheduling / Network control
- 5G and beyond network

Major Achievements

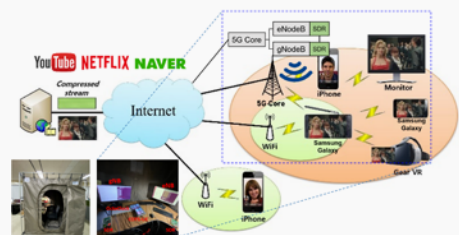
- Network-Aware Consensus Protocol for Enhancing Scalability of Public Blockchains
- Energy-efficient HTTP Adaptive Streaming System over Wireless Network
- Collaborative Virtual 3D Object Modeling for Mobile Augmented Reality Streaming Services
- Head Movement-aware 360° Video VR Streaming System over Wireless Network
- Progressive Mesh-based HTTP Adaptive Augmented Reality Streaming
- Quick Block Transport System for Scalable Hyperledger Fabric Blockchain

Honors and Awards

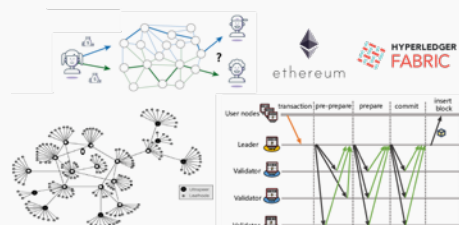
- Best Paper Award at IEEE WiMob 2022 Best Paper
- 2020 한국정보과학회 소사이어티(정보통신분야) 우수논문상
- Workshops Best Paper Award at IEEE SDS and FMEC 2018
- 정보과학회 제43회 정기총회 및 동계학술발표회 우수발표논문상
- Silver Prize at the 20th Samsung Humantech Paper Award
- Workshops Best Paper Award at IEEE SDS & FMEC, 2018

Recent Publications

- Park, Gi Seok, and Hwangjun Song. "Watchdog: Network-Aware Consensus Protocol for Enhancing Scalability of Public Blockchains." IEEE Internet of Things Journal (2024).
- Kim, Ryeong Hwan, Hwangjun Song, and Gi Seok Park. "Moving Real-time Services to Web 3.0: Challenges and Opportunities." IEEE Transactions on Services Computing (2023).
- Hyunmin Noh, Gi Seok Park, Yunmin Go, Sang-Heon Shin, Youngchan Jang, and Hwangjun Song, "Energy-efficient HTTP Adaptive Streaming System over SDN-enabled Wi-Fi APs," IEEE Access Vol. 11, pp. 105427-105439, Sept. 2023.
- Gi Seok Park, Ryeong Hwan Kim, and Hwangjun Song, "Collaborative Virtual 3D Object Modeling for Mobile Augmented Reality Streaming Services over 5G Networks," IEEE Tr. on Mobile Computing, Vol. 22, No.7, pp.3855~3869, July, 2023.
- Hyunmin Noh and Hwangjun Song, "HA2RS: HTTP Adaptive Augmented Reality Streaming System," IEEE Tr. on Mobile Computing, Vol. 22, No.5, pp.2741-2755, May, 2023.
- Ryeong Hwan Kim, Hyunmin Noh, Hwangjun Song, and Gi Seok Park, "Quick Block Transport System for Scalable Hyperledger Fabric Blockchain over D2D-assisted 5G Networks," IEEE Tr. on Network and Service Management, Vol. 19, No. 2, pp. 1176-1190, June, 2022.



5G + 모바일 비디오 스트리밍



하이브리드 P2P 블록체인 네트워크



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Education	▪ Ph.D. Universiteit Utrecht (2001) ▪ M.S. POSTECH (1998)	▪ B.S. Kyungpook National University (1996)
Career	▪ 2006-2007 Assistant Professor, Sejong University, Seoul, Korea ▪ 2007-Present Professor, POSTECH ▪ 2019-2021 Director, Machine Learning Research Center, POSTECH ▪ 2019-2021 Mueunjae Chair Professor, POSTECH ▪ 2019-2021 Vice President, Office of Academic Information Affairs, POSTECH ▪ 2023-Present Vice President, Office of Academic Information Affairs, POSTECH	

Research Overview

Computational geometry is the study of design and analysis of algorithms dealing with geometric objects. Therefore the goal of research is to develop efficient algorithms and data structures for solving problems stated in terms of basic geometrical objects, such as points, line segments, polygons, polyhedra, etc.

It emerged as a sub-discipline of theoretical computer science from 1970s, and has grown into a recognized research discipline in computer science and applied mathematics, with a large community of active researchers. It had developed in several directions and forged links with other application domains such as computer aided design, robotics, computer graphics, virtual reality, computer vision, bio-informatics, and geographic information system.

We believe that knowledge of computational geometry is important to solve geometric problems in application areas efficiently.

Recent Publications

- Maximum Coverage by k Lines. Symmetry, 16(2), 206, 2024.
- Three-dimensional evaluation of a virtual setup considering the roots and alveolar bone in molar distalization cases. Scientific Reports, 13, 14955, 2023.
- Universal convex covering problems under translation and discrete rotations. Advances in Geometry, 23(4), pages 481-500, 2023.
- Farthest-point Voronoi diagrams in the presence of rectangular obstacles. Algorithmica, 85(8), pages 2214-2237, 2023.
- Reliability and time-based efficiency of artificial intelligence-based automatic digital model analysis system. European Journal of Orthodontics, 2023.
- Intersecting Disks using Two Congruent Disks. Computational Geometry, 110, 101966, 2023.
- Hwi Kim, Jaegun Lee, Hee-Kap Ahn. Rectangular Partitions of a Rectilinear Polygon. Computational Geometry, 110, 101965, 2023.
- Covering Convex Polygons by Two Congruent Disks. Computational Geometry, 109, 101936, 2023.

Research Areas

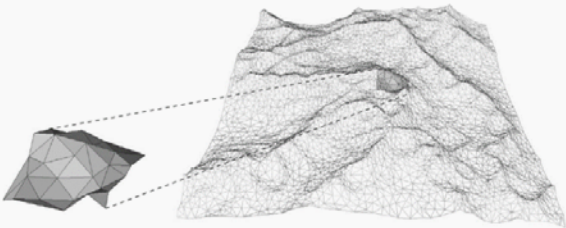
- Computational and Discrete Geometry
- Algorithms
- Data Structures
- Quantum Algorithms

Major Achievements

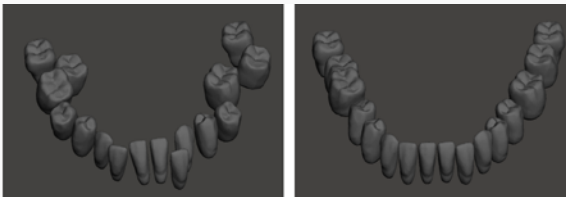
- 2D/3D Geometric Shape Matching Algorithms
- Geometric Shape Approximation
- Geometric Algorithms for Manufacturing (Casting Process)
- Design and Implementation of Networked Virtual Environments Based on PC Cluster.

Honors and Awards

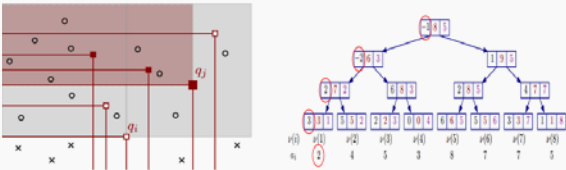
- Best Paper Award at 11th SSTD (2009)
- Excellent Paper/Presentation Award at KIESE/KCC Conferences (2011/2012/2013/2015)
- POSTECH Education Award (2017)
- Mueunjae Chair Professor (2019-2021)



Geometric Shape Matching



3D Alignment



Maximizing Dominance



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▪ Homepage (lab)

<https://sites.google.com/view/discrete-algorithms-lab/>

Education

- **Ph.D.** POSTECH (2018)
- **B.S.** POSTECH (2013)

Career

- **2018-2019** Postdoctoral fellow at Max Planck Institute for Informatics, Saarbrücken, Germany
- **2019-Present** Assistant Professor at POSTECH

Research Overview

My research focuses on designing efficient algorithms for various geometric problems. Specifically, I have been working on the following three topics: (1) dynamic point location problems, (2) shortest path problems in the presence of obstacles and (3) range searching problems. All of the three problems have been studied for the last several decades, yet many algorithmic problems in these fields still remain unsolved. I have worked on challenging open problems in these fields and resolved several long-standing open problems. More specifically, I presented an optimal algorithm for computing the Voronoi diagram in a simple polygon, and a dynamic data structure supporting point location queries and updates in sublinear times. I am currently focusing on developing general techniques and tools which can be universally applied to various geometric problems as well as studying challenging open problems.

Research Areas

- Computational and Discrete Geometry
- Data Structures and Algorithms
- Theory of Computation

Major Achievements

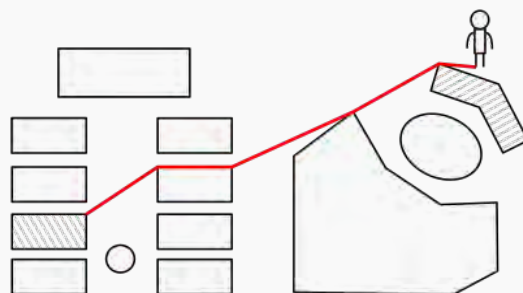
- Shortest Paths in the Euclidean Space with Obstacles
- Data Structures for Clusterings
- Data Structures for Point Location

Honors and Awards

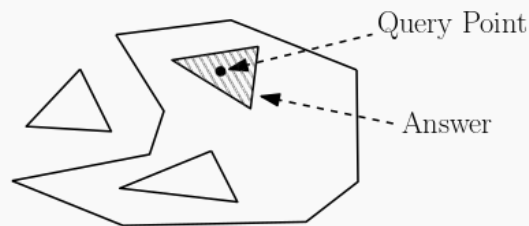
- Lisa Meitner Fellowship, MPI for Informatics

Recent Publications

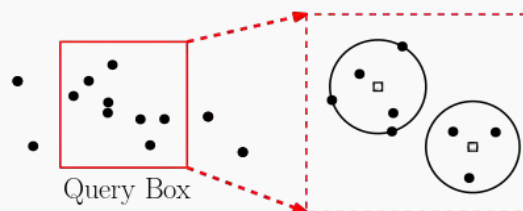
- Optimal Algorithm for Geodesic Nearest-Point Voronoi Diagrams in Simple Polygons (SODA2019)
- Approximate Range Queries for Clustering (SoCG2018)
- Point Location in Dynamic Subdivisions (SoCG2018)
- Voronoi Diagrams for a Moderate-Sized Point-Set in a Simple Polygon (Discrete and Computational Geometry)
- A New Balanced Subdivision of a Simple Polygon for Time-Space Trade-Off Algorithms (Algorithmica)



Shortest Path Problems in Polygonal Domains



Dynamic Point Location Problems



Range Clustering Problems



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Education

▪ **Ph.D.** KAIST (2016)

▪ **B.S.** KAIST (2011)

Career

▪ **2017-2018** Postdoctoral researcher at KTH Royal Institute of Technology, Sweden

▪ **2018-2019** Postdoctoral researcher at University of Illinois at Urbana-Champaign and University of Washington, USA

▪ **2019-Present** Assistant Professor at POSTECH, S. Korea

Research Overview

Jungseul Ok is an associate professor in the Department of Computer Science and Engineering and Graduate School of Artificial Intelligence, and a member of Machine Learning Lab at POSTECH. He completed Ph.D program in School of Electrical Engineering at Korea Advanced Institute of Science and Technology (KAIST), South Korea, under the supervision of Prof. Yung Yi and Prof. Jinwoo Shin. After graduation, he worked with Prof. Alexandre Proutiere and Prof. Sewoong Oh as a postdoctoral researcher, respectively, in School of Electrical Engineering at KTH, Stockholm, Sweden, and Paul G. Allen School of Computer Science & Engineering, University of Washington, WA, US. His research focus is machine learning with data collection, including user-friendly active learning, structured reinforcement learning, and robust crowdsourcing systems.

Research Areas

- Reinforcement Learning
- Machine Learning
- Computational Social Science
- Neural Network Analysis

Major Achievements

- Fundamental limit and optimal algorithm in structured reinforcement learning problem
- Optimal estimation for classification and regression in crowdsourced dataset

Honors and Awards

- Qualcomm-KAIST Innovation Award, Qualcomm, 2016
- Nomination Award, Fellowships at Microsoft Research Asia, 2015
- Bronze Prize, 21st Samsung Humantech Thesis, Samsung Electronics, 2014
- Summa Cum Laude Honor, KAIST, 2011

Recent Publications

- Hyejin Park, Jeongyeon Hwang, Sunung Mun, Sangdon Park, Jungseul Ok, "MedBN: Robust Test Time Adaptation against Malicious Test Samples," CVPR 2024
- Hoyoung Kim, Minhyeon Oh, Sehyun Hwang, Suha Kwak, Jungseul Ok, "Adaptive Superpixel for Active Learning in Semantic Segmentation," ICCV 2023
- Jaechang Kim, Yunjoo Lee, Hyun Mi Cho, Dong Woo Kim, Chi Hoon Song and Jungseul Ok, "Activity-informed Industrial Audio Anomaly Detection via Source Separation", ICASSP 2023
- Byungchan Ko and Jungseul Ok, "Efficient Scheduling of Data Augmentation for Deep Reinforcement Learning", NeurIPS 2022
- Jungseul Ok, Alexandre Proutiere, and Damianos Tranos, "Exploration in Structured Reinforcement Learning", NeurIPS, 2018
- Jungseul Ok, Sewoong Oh, Jinwoo Shin and Yung Yi, "Optimality of Belief Propagation for Crowdsourced Classification", ICML, 2016

Machine Learning

- Scalable clustering algorithms
- Statistical inference
- Hierarchical learning

Computational Social Science

- Crowdsourcing system
- Analysis of social networks
- Social impact of ML

Reinforcement Learning

- Adaptive sampling algorithms
- Structured reinforcement learning
- Learning to optimize

Deep Learning Analysis

- Model selection and network pruning
- Algorithmic regularization
- Landscape analysis



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Education

▪ Ph.D.

University of Illinois at Urbana-Champaign (2004)

▪ B.S.

Chung-Ang University (1997)

Career

▪ 2004-2007

Professor, University of Iowa, USA

▪ 2008-Present

Professor, POSTECH

자문교수: 삼성전자, LG전자, 포스코, 현대자동차, 국민은행, 보험개발원 등

사외이사: (주)캐롯손해보험, (주)AI인사이트

Research Overview

AI is really a science of data, where computer vision engages with visual data and NLP delves into linguistic data. Moreover, the vast array of data types including tables, matrices, tensors, graphs, and time-series pervades across industries and organizations, emanating from diverse sources. Unearthing value from such data constitutes the very essence of AI and data science. Our current research interests lie in NLP & trustworthy LLMs, recommender system, time-series & anomaly detection, and multi-modal learning.

Research Areas

- Data Science
- Artificial Intelligence
- Natural Language Processing

Major Achievements

- Scatter lab's "이루다" LLM & Chatbot
- Recommender System
- Scalable Machine Learning
- Time-Series Anomaly Detection

Honors and Awards

- 공학한림원이 선정한, “2025년 대한민국을 이끌 100대 기술 및 주역”
- 네이버 젊은 석좌 교수, 카카오 석좌교수
- POSTECH URP 최우수 지도 교수
- IITP 소프트웨어 스타랩 선정
- 국가연구개발 우수성과 100선 선정

Recent Publications

- KoDialogBench: Evaluating Conversational Understanding of Language Models with Korean Dialogue Benchmark, COLING 2024
- Improving Retrieval in Theme-specific Applications using a Corpus Topical Taxonomy, WWW 2024
- Doubly Calibrated Estimator for Recommendation on Data Missing Not At Random, WWW 2024
- Top-Personalized-K Recommendation, WWW 2024
- Multi-Domain Recommendation to Attract Users via Domain Preference Modeling, AAAI 2024
- Distillation from Heterogeneous Models for Top-K Recommendation, WWW 2023
- Learning Topology-Specific Experts for Molecular Property Prediction, AAAI 2023
- Dynamic Multi-Behavior Sequence Modeling for Next Item Recommendation, AAAI 2023
- Topic Taxonomy Expansion via Hierarchy-Aware Topic Phrase Generation, EMNLP 2022
- Generating Multiple-Length Summaries via Reinforcement Learning for Unsupervised Sentence Summarization, EMNLP 2022
- Beyond Learning from Next Item: Sequential Recommendation via Personalized Interest Sustainability, CIKM 2022
- A Light Bug Triage Framework for Applying Large Pre-trained Language Model, ASE 2022
- Toward Interpretable Semantic Textual Similarity via Optimal Transport-based Contrastive Sentence Learning, ACL 2022
- Consensus Learning from Heterogeneous Objectives for One-Class Collaborative Filtering, WWW 2022
- TaxoCom: Topic Taxonomy Completion with Hierarchical Discovery of Novel Topic Clusters, WWW 2022
- Obtaining Calibrated Probabilities with Personalized Ranking Models, AAAI 2022





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Education	▪ Ph.D. University of Oxford (2020) ▪ M.S. Carnegie Mellon University (2015) ▪ B.S. Hanyang University (2013)	
Career	▪ 2019 Visiting researcher, Australian National University ▪ 2019-2020 Visiting researcher, EPFL ▪ 2020-2021 Assistant Professor, UNIST ▪ 2022- Visiting Researcher, Google ▪ 2022- Assistant Professor, POSTECH	

Research Overview

The vision of my research group is to engage in the broad field of artificial intelligence and push the frontiers of the state of the art in machine learning research. In particular, we focus on solving large-scale machine learning problems: understanding the complex behaviours of artificial neural networks, compressing overparameterized neural network models to find optimal solutions, and developing efficient and robust optimization methods in various distributed settings. We pursue this goal by studying the science of deep learning as well as by investigating theoretical and applied aspects of the principles and practices in optimization. The ultimate goal is establishing the computational foundations and general principles of learning systems so as to solve challenging problems in the real world.

Research Areas

- Machine Learning
- Optimization

Major Achievements

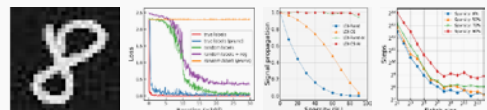
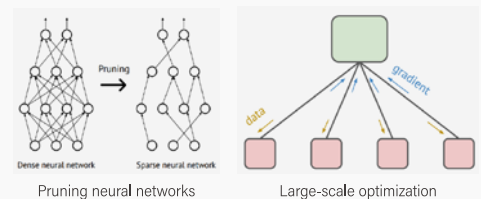
- Efficient and robust optimization methods for large-scale machine learning

Honors and Awards

- Best paper award, JKAIA 2023
- NVIDIA AI Labs Award, 2017

Recent Publications

- "The Effects of Overparameterization on Sharpness-Aware Minimization: An Empirical and Theoretical Analysis", Sungbin Shin*, Dongyeop Lee*, Maksym Andriushchenko, Namhoon Lee. In ICML Workshop 2023 and JKAIA 2023.
- "A Closer Look at the Intervention Procedure of Concept Bottleneck Models", Sungbin Shin, Yohan Jo, Sungsoo Ahn, Namhoon Lee. In ICML 2023.
- "Meta-Learning Sparse Implicit Neural Representations", Jaeho Lee*, Jihoon Tack*, Namhoon Lee, and Jinwoo Shin. In NeurIPS 2021.
- "Understanding the Effects of Data Parallelism and Sparsity on Neural Network Training", Namhoon Lee, Thalaiyasingam Ajanthan, Philip H. S. Torr, and Martin Jaggi. In ICLR 2021.
- "A Signal Propagation Perspective for Pruning Neural Networks at Initialization", Namhoon Lee, Thalaiyasingam Ajanthan, Stephen Gould, Philip H. S. Torr. In ICLR 2020 (Spotlight).
- "SNIP: Single-shot Network Pruning based on Connection Sensitivity", Namhoon Lee, Thalaiyasingam Ajanthan, Philip H. S. Torr. In ICLR 2019.



DESIRE accurately predicts for future paths of moving vehicles in dynamic scenes.



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Education

▪ **Ph.D.** Computer Science and Engineering, Seoul National University (2013)

▪ **M.S.** Computer Science and Engineering, Seoul National University (2013)

▪ **B.S.** Electrical Engineering, Korea University (2005)

Career

▪ **2013-2016** Postdoctoral Associate, CSAIL, MIT

▪ **2016-2017** Assistant Professor, Inha University

▪ **2017-2021** Assistant Professor, DGIST

▪ **2021-2025** Associate Professor, DGIST

▪ **2025-Present** Associate Professor, Dept. of Computer Science and Engineering, POSTECH

Research Overview

Our mission is to develop computer systems that efficiently deal with a huge amount of data, in terms of performance, power, and cost, while ensuring data availability, durability, and persistency. To this end, we are carrying out studies across a variety of computing platforms, ranging from memory devices, server systems to even distributed systems, where data is of importance. In particular, our research focuses on designing, refactoring, and optimizing computer systems from the perspective of efficient data management by leveraging latest algorithms like machine learning (ML) and deep-learning (DL).

Research Areas

- Computer Systems
- Operating Systems
- Memory/Storage Systems
- AI Systems

Major Achievements

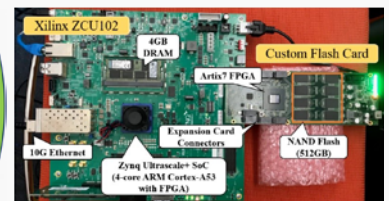
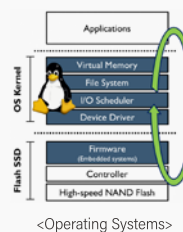
- Optimizing and Refactoring OS Kernel for Emerging Hardware and Systems
- Architecting Memory/Storage Systems for Data-intensive Applications
- Optimizing Computer Systems for AI Applications
- Leveraging ML Algorithms to Enhance System Performance

Honors and Awards

- Test of Time Paper Award, SIGFAST, Korean Institute of Information Scientists and Engineers (KIISE), 2024
- Best Paper Award, USENIX Annual Technical Conference (USENIX ATC'20), 2020
- Post-Doctoral Research Fellowship, National Research Foundation of Korea (NRF), 2013 - 2014
- Samsung Electronics Ph.D. Fellowship, Samsung Electronics, 2011 - 2013
- Microsoft Research Asia (MSRA) Fellowship, Microsoft, 2010
- Korea Student Aid Foundation (KOSAF) Fellowship, Korea Government, 2009 - 2010
- Best Paper Award, Institute of Embedded Engineering of Korea (IEMEK), 2009

Recent Publications

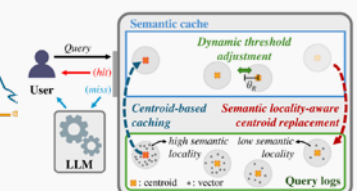
- J. Kim, S. Oh, J. Kung, Y. Kim, S. Lee, "NDPipe: Exploiting Near-data Processing for Scalable Inference and Continuous Training in Photo Storage," ASPLOS'24
- S. Oh, J. Kim, S. Han, J. Kim, S. Lee, Sam H. Noh, "MIDAS: Minimizing Write Amplification in Log-Structured Systems through Adaptive Group Number and Size Configuration," USENIX FAST'24
- J. Koo, J. Bae, M. Yuk, S. Oh, J. Kim, J.-S. Park, E. Lee, B. S. Kim, S. Lee, "All-Flash Array Key-Value Cache for Large Objects," EuroSys'23
- J. Park, J. Kim, Y. Kim, S. Lee, "DeepSketch: A Machine Learning-Based Reference Search Technique for Post-Deduplication Delta Compression," USENIX FAST'22
- J. Koo, J. Im, J. Song, J. Park, E. Lee, B. S. Kim, S. Lee, "Modernizing File System through In-Storage Indexing," OSDI'21
- J. Im, J. Bae, C. Chung, Arvind, S. Lee, "Pink: High-speed In-storage Key-value Store with Bounded Tails," USENIX ATC'20



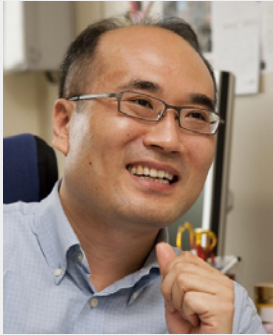
<Memory-Storage Systems>



<Big-data Systems>



<AI Systems>



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Education	▪ Ph.D. KAIST (1995) ▪ M.S. KAIST (1990) ▪ B.S. Seoul National University (1988)	
Career	▪ 1996.10–Present Professor, POSTECH ▪ 2014.1–2015.12 President, Korea Computer Graphics Society ▪ 2010.9–2011.8 Visiting professor, Adobe Research ▪ 2003.8–2004.8 Visiting professor, MPI Informatik ▪ 1995.3–1996.9 Post-doctoral Researcher, CCNY/CUNY	

Research Overview

My research goal is to develop algorithms and techniques useful for software and tools in various graphics applications. In terms of research topics, the current focuses are on 3D reconstruction and human modeling, covering texture mapping for dense 3D reconstruction, abstract reconstruction of indoor scenes, and 3D avatar modeling. In terms of research tools, recent deep learning methods, 3D scanning using RGBD sensors, problem-specific optimization frameworks are commonly used to find the optimal solutions. I enjoy finding simple but effective solutions that can be readily implemented and optimized for practical applications. I am also much interested in industrial deployments of my research results. My technologies on image deblurring and photo upright adjustment have been transferred to Adobe Creative Cloud and Adobe Photoshop Lightroom.

Research Areas

- Computer Graphics & 3D Vision
- 3D object/scene reconstruction
- Human/Avatar modeling

Major Achievements

- Image and video deblurring
- Stylized rendition of 2D images and 3D models
- Photo and 360 image upright adjustment
- Texture mapping for 3D reconstruction
- 2D/3D caricature generation
- Virtual markers for articulated 3D shapes
- 3D clothed-human body reconstruction

Honors and Awards

- Best Paper Award, KCGS, 2022
- Computer Graphics Grand Award, KCGS, 2018
- Gahun Academic Award, KIISE, 2014
- Best Paper Awards, Pacific Graphics 2014, 2019
- Best Kinect-Application Award, ACCV, 2012
- Commendation, MCST, 2011
- Best Science and Engineering Paper Award, KOFST, 2011

Recent Publications

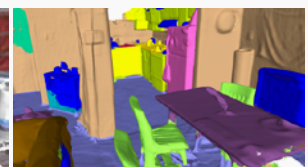
- Discontinuity-preserving Normal Integration with Auxiliary Edges, CVPR 2024.
- Mesh Density Adaptation for Template-based Shape Reconstruction, SIGGRAPH 2023.
- LaplacianFusion: Detailed 3D Clothed-Human Body Reconstruction, SIGGRAPH Asia 2022.
- Deep Deformable 3D Caricatures with Learned Shape Control, SIGGRAPH 2022.
- TextureMe: High-quality Textured Scene Reconstruction in Real Time, ACM TOG, 2022.
- Reference-based Video Super-Resolution Using Multi-Camera Video Triplets, CVPR 2022.
- Single Image Defocus Deblurring Using Kernel-Sharing Parallel Atrous Convolutions, ICCV 2021.
- Deep Virtual Markers for Articulated 3D Shapes, ICCV 2021, oral. StyleCariGAN: Caricature Generation via StyleGAN Feature Map Modulation, ACM TOG, 2021.
- Recurrent Video Deblurring with Blur-Invariant Motion Estimation and Pixel Volumes, ACM TOG, 2021.
- Iterative Filter Adaptive Network for Single Image Defocus Deblurring, CVPR 2021.



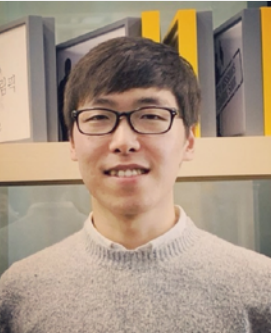
StyleCariGAN: Caricature generation



3D clothed-human body reconstruction



Semantic reconstruction of 3D indoor scenes



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▪ Homepage (lab) <https://wonyeol.github.io/>

Education

▪ Ph.D. Stanford University (2023)

▪ B.S. POSTECH (2014)

Career

▪ 2016 Research Intern, Microsoft Research Redmond

▪ 2017 Research Intern, Microsoft Research India

▪ 2017-2020 Research Scientist, KAIST (Military Service)

▪ 2023-2024 Postdoctoral Associate, CMU

▪ 2024-Present Assistant Professor, POSTECH

Research Overview

My research aims at making continuous computations more reliable and scalable. To achieve this, I study a wide range of continuous computations across various areas, including programming languages and machine learning, with a focus on their correctness and efficiency. Specifically, I am interested in three research directions: (i) analyzing existing practical continuous computations from theoretical perspectives; (ii) designing new practical continuous computations with theoretical guarantees; and (iii) understanding the fundamental limitations of continuous computations.

Research Areas

- Continuous Computations
- Programming Languages
- Machine Learning

Major Achievements

- Correctness of Math Libraries
- Correctness of Automatic Differentiation
- Correctness of Variational Inference

Honors and Awards

- Samsung Scholarship, 2014-2022
- Korea Presidential Science Scholarship, 2010-2014
- Samsung Humantech Paper Award, Bronze Prize, 2013

Recent Publications

- What Does Automatic Differentiation Compute for Neural Networks?, ICLR 2024 (Spotlight).
- On the Correctness of Automatic Differentiation for Neural Networks with Machine-Representable Parameters, ICML 2023.
- Smoothness Analysis for Probabilistic Programs with Application to Optimised Variational Inference , POPL 2023.
- On Correctness of Automatic Differentiation for Non-Differentiable Functions, NeurIPS 2020 (Spotlight).
- Towards Verified Stochastic Variational Inference for Probabilistic Programs, POPL 2020.
- Reparameterization Gradient for Non-Differentiable Models, NeurIPS 2018.
- On Automatically Proving the Correctness of math.h Implementations, POPL 2018.
- Verifying Bit-Manipulations of Floating-Point, PLDI 2016.

For $x \in \text{Float}$, how to compute $\exp(x)$?

GNU libm

intel Intel icx

LLVM

For $\mu, \sigma^2 \in \text{Float}$, how to sample $\text{Normal}(\mu, \sigma^2)$?

GSL

NumPy

SciPy

For $f \in [\mathbb{R}^n \rightarrow \mathbb{R}^m]$, how to compute $\nabla f(x)$?

TensorFlow

PyTorch

JAX

For $p \in \mathcal{P}(\mathbb{R}^n)$, how to compute $\mathbb{E}_{x \sim p}[f(x)]$?

Pyro

Stan

PyMC

Correctness: Can prove their correctness?

Efficiency: Can make them more efficient?



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Education

Ph.D.

M.S.

B.S.

University of Wisconsin-Madison (2015)

University of Wisconsin-Madison (2011)

Soongsil University (2009)

Career

2015-2018

2018-2019

2019-2025

Postdoctoral Researcher, Wisconsin Institute for Discovery

Postdoctoral Researcher, Boston University

Assistant Professor, University of Arizona

Homepage (lab)

<https://kwangsungjun.github.io/>

Research Overview

My research group focuses on machine learning, with particular emphasis on interactive machine learning—a paradigm in which learning systems not only infer patterns from data but also make intelligent decisions about how data should be collected. This setting encompasses foundational problems such as contextual bandits, reinforcement learning, and active learning, which play a central role in modern machine learning. Our work bridges theory and practice. We develop algorithms with real-world impact while simultaneously studying their theoretical foundations, providing mathematical guarantees and characterizing fundamental limits of performance. These theoretical insights often deepen our understanding of existing methods and, in many cases, directly motivate the design of more efficient and principled algorithms. Our long-term vision is to lay the theoretical and algorithmic foundations of interactive machine learning, enabling the next generation of AI agents that can autonomously improve through interaction, with minimal or no human intervention.

Research Areas

- Machine Learning
- Interactive Machine Learning
- Machine Learning Theory
- Bandits & Reinforcement Learning

Major Achievements

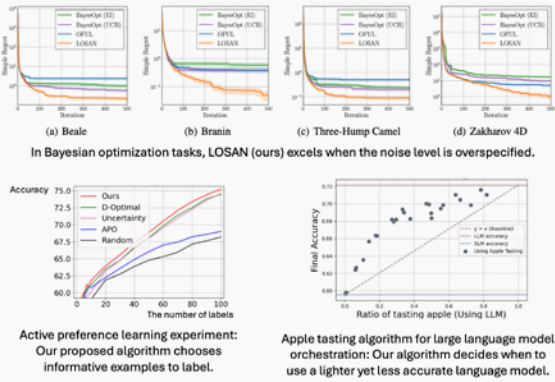
- Theory of Reinforcement learning from human feedback (RLHF) and direct policy optimization (DPO)
- Variance-adaptive algorithms in confidence sequences and online/offline contextual bandits
- Established optimal performance rates including pure exploration bandits and logistic bandits
- Established a novel bandit algorithmic family called Maillard sampling

Honors and Awards

- NSF Communications and Information Foundations (CIF) award

Recent Publications

- J. Jon Ryu, Jeongyeol Kwon, Benjamin Koppe, Kwang-Sung Jun. "Improved Offline Contextual Bandits with Second-Order Bounds: Betting and Freezing." In Conference on Learning Theory (COLT), 2025
- Kapilan Balagopalan, Kwang-Sung Jun. "Minimum Empirical Divergence for Sub-Gaussian Linear Bandits." In International Conference on Artificial Intelligence and Statistics (AISTATS), 2025
- Junghyun Lee, Se-Young Yun, and Kwang-Sung Jun. "A Unified Confidence Sequence for Generalized Linear Models, with Applications to Bandits." In Neural Information Processing Systems (NeurIPS), 2024
- Kwang-Sung Jun, Jungtaek Kim. "Noise-Adaptive Confidence Sets for Linear Bandits and Application to Bayesian Optimization." In International Conference on Machine Learning (ICML), 2024
- Francesco Orabona, Kwang-Sung Jun. "Tight Concentrations and Confidence Sequences from the Regret of Universal Portfolio." IEEE Transactions on Information Theory (TIT), 2024
- Yao Zhao, Connor Stephens, Csaba Szepesvári, Kwang-Sung Jun. "Revisiting Simple Regret: Fast Rates for Returning a Good Arm." In International Conference on Machine Learning (ICML), 2023





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Education	▪ Ph.D.	Rice University (2014)	
	▪ M.S.	KAIST (2009)	
	▪ B.S.	Kwangwoon University (2005)	
Career	▪ 2014-2015	Senior Design Engineer, ARM Research	
	▪ 2015-2018	Senior Research Engineer, Microsoft Research Redmond	
	▪ 2018-2020	Assistant Professor, UNIST	
	▪ 2022-	Visiting Processor, Microsoft DeepSpeed	
	▪ 2020-2024	Associate Professor, UNIST	

Research Overview

Our research goal is to advance the state of the art in emerging large-scale data-intensive computing platforms by making them more efficient, responsive, intelligent, and programmable. Our current research topics lie in the following areas: (1) Systems and AI: We build systems support for improving machine learning frameworks and prediction-serving systems, as well as leverage machine learning in producing intelligent system software. (2) Bigdata analytics: We build data processing pipelines for real-time big data analytics at cloud/IoT scale that enable system operators to promptly troubleshoot system anomalies, improving the performance and reliability of their services. (3) Systems for new HW: We produce substantially better system software in the face of the recent explosion of hardware features and heterogeneity, such as accelerators and processor/memory tailored to improve efficiency, density, and performance predictability.

Research Areas

- AI System
- Bigdata System
- Cloud Computing

Major Achievements

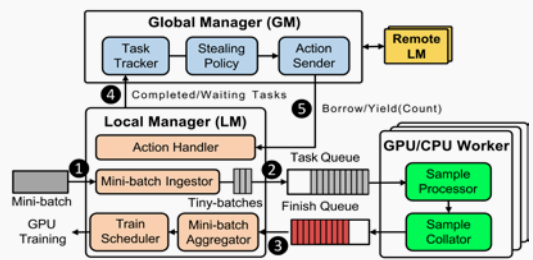
- Large-scale GPU Cluster Manager
- Optimal Parallelism for DNN Workloads
- Energy-efficient AI System
- Streaming on Serverless Functions
- Optimal Bigdata Caching and Offloading

Honors and Awards

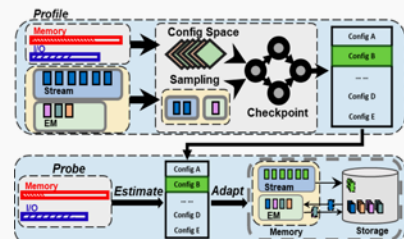
- Best Student Paper Award, ACM SYSTOR 2016
- Meta Faculty Research Award, Finalist, 2020
- Meta Faculty Research Award, Finalist, 2022
- Best Paper Award, IEEE ICDE 2022

Recent Publications

- Taeyoon Kim, Chanho Park, Mansur Mukimbekov, Heelim Hong, Minseok Kim, Ze Jin, Changdae Kim, Ji-Yong Shin, and Myeongjae Jeon, "FusionFlow: Accelerating Data Preprocessing for Machine Learning with CPU-GPU Cooperation", VLDB 2024
- Xinyue Ma, Suyeon Jeong, Minjia Zhang, Di Wang, Jonghyun Choi, and Myeongjae Jeon, "Cost-effective On-device Continual Learning over Memory Hierarchy with Miro", ACM MobiCom 2023
- Soobee Lee, Minindu Weerakoon, Jonghyun Choi, Minjia Zhang, Di Wang, Myeongjae Jeon, "CarM: Hierarchical Episodic Memory for Continual Learning", DAC 2022
- Atul Sandur, ChanHo Park, Stavros Volos, Gul Agha, Myeongjae Jeon, "Jarvis: Large-scale Server Monitoring with Adaptive Near-data Processing", IEEE ICDE 2022 (Best Paper Award)
- Gangmuk Lim, Jeongseob Ahn, Wencong Xiao, Youngjin Kwon, Myeongjae Jeon, "Zico: Efficient GPU Memory Sharing for Concurrent DNN Training", USENIX ATC 2021



System design for accelerating ML data preprocessing <FusionFlow, VLDB' 24>



System design for energy-efficient continual learning <Miro, MobiCom' 23>



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<http://cvlab.postech.ac.kr/~mcho>

Education

▪ **Ph.D.** Seoul National University (2012)
 ▪ **B.S.** Seoul National University (2001)

Career

▪ **2012-2015** Inria-ENS Paris, Postdoctoral Research Fellow
 ▪ **2015.5-2016.6** Inria-ENS Paris, Inria Starting Researcher
 ▪ **2016.6-2020.2** POSTECH, Assistant Professor
 ▪ **2020.3-Present** POSTECH, Associate Professor

Research Overview

My research lies in computer vision and machine learning, focusing on visual learning for relational problems in 2D & 3D space and time, such as semantic correspondence, symmetry detection, structural video analysis, and object assembly. While there has been significant progress in generative models, understanding relations and structures within/across images, videos, and 3D data in the wild remains an extremely challenging problem. In our group, we investigate robust vision (and language) models that learn to recognize relational and structural patterns for diverse tasks, while requiring a minimal degree of human supervision.

Research Areas

- Computer Vision
- Machine Learning

Major Achievements

- Visual semantic correspondence in 2D and 3D
- Unsupervised object discovery and localization
- Symmetry detection and analysis
- 2D image and 3D shape generation
- 3D geometric object assembly and generation
- Action recognition and video understanding
- Equivariant representation learning
- Few-shot meta-learning and minimally-supervised learning

Honors and Awards

- TPAMI, IJCV Associate Editor
- CVPR '18-'24, ECCV '24, ICCV '19-'23 Area Chair
- KCCV'24, ACCV'24 Program Chair
- ICCV'19, ACM MM'18 Web Chair, ICCV'23 Workshop Chair
- 2019 Proud POSTECHIAN Award in Education
- ICCV 2019 CoView workshop challenge, 2nd place winner
- ACM Multimedia CoView workshop challenge, 1st place winner
- MSRA 2018 Collaborative Research Grant Awards

Recent Publications

- Sua Choi, Dahyun Kang, Minsu Cho, Contrastive Mean-Shift Learning for Generalized Category Discovery, CVPR 2024
- Manjin Kim, Paul Hongsuck Seo, Cordelia Schmid, Minsu Cho, Learning Correlation Structures for Vision Transformers, CVPR 2024.
- Dayoung Gong*, Joonseok Lee*, Deunsol Jung, Suha Kwak, Minsu Cho, Activity Grammars for Temporal Action Segmentation, NeurIPS 2023
- Seungwook Kim*, Chunghyun Park*, Yoonwoo Jeong, Jaesik Park, Minsu Cho, Stable and Consistent Prediction of 3D Characteristic Orientation via Invariant Residual Learning, ICML 2023
- Juhong Min, Yucheng Zhao, Chong Luo, Minsu Cho, Peripheral Vision Transforms, NeurIPS 2022

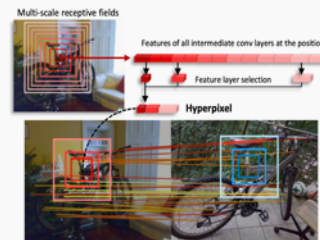
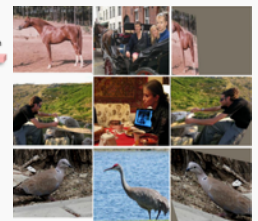


Figure 1: Hyperpixel flow. Top: The hyperpixel is a multi layer pixel representation created with selected levels of features optimized for correspondence, providing multi-scale features, resolving local ambiguities. Bottom: The proposed method, hyperpixel flow, establishes dense correspondences in real time using hyperpixels.



(a) Source image (b) Target image (c) HPP (ours)
 Figure 2: Qualitative results on SPair-71k. The source images are transformed to target images using correspondences.

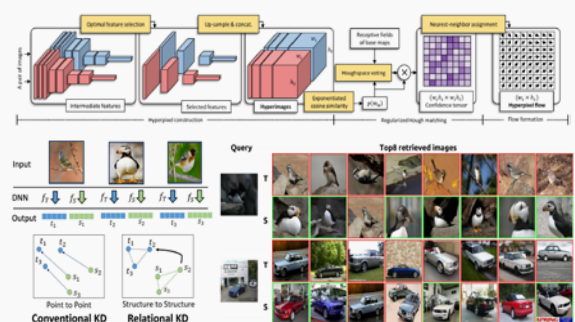


Figure 3: Relational Knowledge Distillation. While conventional KD transfers individual outputs from a teacher model (T) to a student model (S) point-wise, our approach transfers relations of the outputs structure-wise.

Figure 4: Retrieval results on CUB-200-2011 and Cars 196 datasets. The top eight images are placed from left to right. Green and red bounding boxes represent positive and negative images, respectively. T denotes the teacher trained with the triplet loss while S is the student trained with RKD-DA, giving better results than the teacher.



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Education

▪ **Ph.D.** POSTECH (2012)

▪ **B.S.** POSTECH (2005)

Career

▪ **2010.7-2010.11** Intern, Adobe Research

▪ **2012.3-2014.3** Research scientist, Adobe Research

▪ **2014.4-2017.8** Senior engineer, Samsung Electronics

▪ **2017.4-2019.8** Assistant professor, DGIST

▪ **2019.8-2021.8** Assistant professor, POSTECH

▪ **2021.9-Present** Associate Professor, POSTECH

Research Overview

The primary goal of the research in our lab is to develop intelligent algorithms that can help create and enhance visual contents including images and videos. To this end, we study various research problems ranging from image restoration problems such as image denoising, super-resolution, deblurring to graphics applications such as the synthesis and editing of images and 3D models. We are also actively working on developing deep learning algorithms to create more intelligent solutions to those problems.

Research Areas

- Computational photography
- Image/video processing
- Computer graphics
- Computer vision

Major Achievements

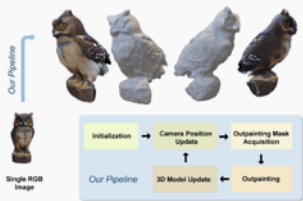
- Image and video deblurring
- Learning-based image restoration
- Tech transfer to Adobe Photoshop CC

Honors and Awards

- IPIU 2024 Best Paper Award (Bronze)
- KSC 2023 Best Paper Award
- Outstanding Reviewer for CVPR 2013, 2017, 2021
- POSTECH CSE Young Scholar Award
- IPIU 2021 Best Paper Award (Silver)
- KSC 2020 Best Paper Presentation Award
- Pacific Graphics 2019 Best Paper Award
- IPIU 2019 Best Paper Award (Silver, Bronze, Best Poster Paper Awards)
- KSC 2018 Best Paper Award (Silver Award)
- KCGS 2018 Best Poster Award
- KCGS 2017 Best Paper Award

Recent Publications

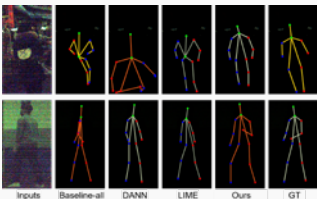
- Woohyeok Kim, Geunu Kim, Junyong Lee, Seungyong Lee, Seung-Hwan Baek, Sunghyun Cho, ParamISP: Learned Forward and Inverse ISPs using Camera Parameters, CVPR 2024
- Haechan Lee, Wonjoon Jin, Seung-Hwan Baek, Sunghyun Cho, Leveraging Stereo Prior for Generalizable Novel-View Synthesis, CVPR 2024
- Hyeongmin Lee, Kyoungkook Kang, Jungseul Ok, Sunghyun Cho, CLIPtone: Unsupervised Learning for Text-based Image Tone Adjustment, CVPR 2024
- Nuri Ryu, Minsu Gong, Geonung Kim, Joo-Haeng Lee, Sunghyun Cho, 360° Reconstruction From a Single Image Using Space Carved Outpainting, ACM SIGGRAPH Asia 2023
- Kyungmin Jo, Wonjoon Jin, Jaegul Choo, Hyunjoon Lee, Sunghyun Cho, 3D-Aware Generative Model for Improved Side-View Image Synthesis, ICCV 2023



Nuri Ryu, Minsu Gong, Geonung Kim, Joo-Haeng Lee, Sunghyun Cho, 360° Reconstruction From a Single Image Using Space Carved Outpainting, ACM SIGGRAPH Asia 2023



Kyungmin Jo, Wonjoon Jin, Jaegul Choo, Hyunjoon Lee, Sunghyun Cho, 3D-Aware Generative Model for Improved Side-View Image Synthesis, ICCV 2023



Sohyun Lee, Jaesung Rim, Boseung Jeong, Geonu Kim, Byungju Woo, Haechan Lee, Sunghyun Cho, Suha Kwak, Human Pose Estimation in Extremely Low-Light Conditions, CVPR 2023



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eunkyungjo@postech.ac.kr

▪ Homepage (lab)

<https://www.eunkyungjo.com/>

Education

▪ Ph.D.

University of California, Irvine (2025)

▪ M.S.

Purdue University (2019)

▪ B.S.

Seoul National University (2017)

Career

▪ 2019-2020

Researcher, National Center for Mental Health

▪ 2025-Present

Assistant Professor, POSTECH

Research Overview

As a human-computer interaction (HCI) and computer-supported collaborative work (CSCW) researcher in Health, my work focuses on improving the design and real-world use of technology for collaborative health monitoring by accounting the infrastructural complexity. My research approach encompasses understanding how stakeholders use existing health monitoring tools through interviews, surveys, and log analysis; developing prototypes to explore novel design ideas; and evaluating these designs through real-world field deployments.

Research Areas

- Human-Computer Interaction
- Computer-Supported Cooperative Work
- Ubiquitous Computing
- Health Informatics

Major Achievements

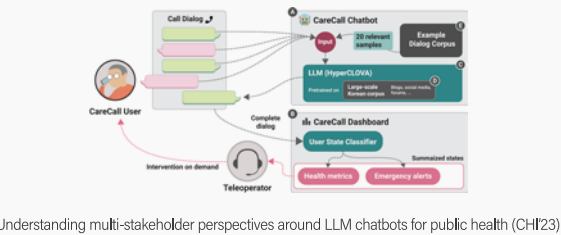
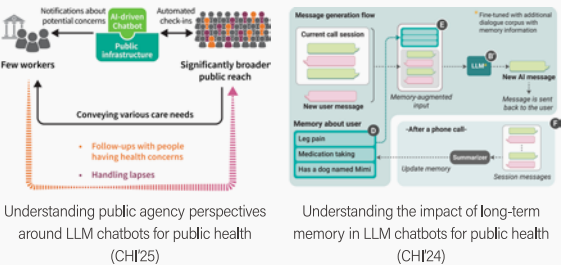
- Multi-stakeholder analysis of LLM chatbot deployment in public health interventions
- Real-world conversation log analysis to examine the impact of long-term memory integration in LLM chatbots
- Development of a flexible clinical decision-support tool for longitudinal psychiatric care planning

Honors and Awards

- Best Paper Award, ACM CHI 2023
- Google PhD Fellowship (2023-2025)

Recent Publications

- Eunkyung Jo, Young-Ho Kim, Sang-Houn Ok, Daniel A. Epstein, "Understanding Public Agencies' Expectations and Realities of AI-Driven Chatbots for Public Health Monitoring", ACM CHI 2025
- Eunkyung Jo, Rachael Zehrung, Katherine E. Genuario, Alexandra Papoutsaki, Daniel A. Epstein, "Exploring Patient-Generated Annotations to Digital Clinical Symptom Measures for Patient-Centered Communication", ACM CSCW 2024
- Eunkyung Jo, Yui Jeong, SoHyun Park, Daniel A. Epstein, Young-Ho Kim, "Understanding the Impact of Long-Term Memory on Self-Disclosure with Large Language Model-Driven Chatbots for Public Health Intervention", ACM CHI 2024
- Eunkyung Jo, Daniel A. Epstein, Hyunhoon Jung, Young-Ho Kim, "Understanding the Benefits and Challenges of Deploying Conversational AI Leveraging Large Language Models for Public Health Intervention", ACM CHI 2023
- Eunkyung Jo, Myeonghan Ryu, Georgia Kenderova, Samuel So, Bryan Shapiro, Alexandra Papoutsaki, Daniel A. Epstein, "Designing Flexible Longitudinal Regimens: Supporting Clinician Planning for Discontinuation of Psychiatric Drugs", ACM CHI 2022





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Education	▪ Ph.D. Purdue University (2003) ▪ M.S. Seoul National University (1997) ▪ B.S. Seoul National University (1995)	
Career	▪ 2004.1-2005.6 Post-Doctoral Research Associate, Purdue University ▪ 2005.7-Present Professor, Computer Science and Engineering, POSTECH ▪ 2017.9-2019.8 Vice President for the Office of Information Affairs, POSTECH ▪ 2023-2024 President, Korea Haptics Society	

Research Overview

My research centers arounds finding and designing easy, effective, and novel interaction methods between human users and a system of interest, which can be computers, robots, electronic device, and cars, to name a few. Emphasis is on physical interaction where the human somatosensory system has the predominant role for interaction. Current research topics include understanding and automatic synthesis of motion effects for 4D films and XR games, full-body haptic rendering for metaverse, and immersive human-robot-interaction for shared autonomy. We also actively collaborate with Hyundai motor company to add haptics and XR to autonomous vehicles.

Research Areas

- Haptics
- Virtual Reality, Human-Computer Interaction, and Robotics
- Applied Perception

Major Achievements

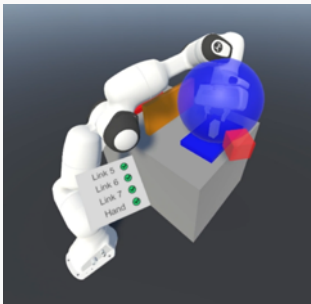
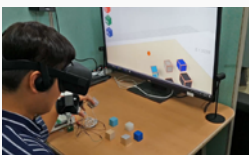
- Authoring and Synthesis of Haptic Content
- Vibrotactile Rendering and Perception
- Data-driven Haptic Rendering
- Automatic Synthesis of Motion Effects for VR

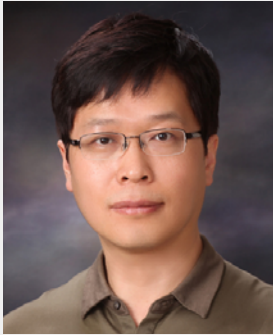
Honors and Awards

- 2023, POSTECHian Award – Education, POSTECH
- 2023, Best Paper Award, IEEE Transactions on Haptics
- 2023, Honorable Mention, ACM CHI Conference on Human Factors in Computing Systems
- 2011, Early Career Award, IEEE Technical Committee on Haptics

Recent Publications

- Jiwan Lee, Junwoo Kim, Jeonggoo Kang, Eunsoo Jo, Dong Chul Park, and Seungmoon Choi, "Telemetry-based Haptic Rendering for Racing Game Experience Improvement," IEEE Transactions on Haptics, 2024 (Also presented in the IEEE Haptics Symposium 2024).
- Jiwan Lee, Sung H. Han, and Seungmoon Choi, "Sensory Cue Integration of Visual and Vestibular Stimuli: A Case Study for 4D Rides," Virtual Reality, vol. 27, pp. 1671-1683, 2023.
- Yongjae Yoo, Inwook Hwang, and Seungmoon Choi, "Perceived Intensity Model of Dual-Frequency Superimposed Vibration: Pythagorean Sum," IEEE Transactions on Haptics, vol. 15, no. 2, pp. 405-415, April 2022 (Best Paper Award).
- Jaejun Park, Sangyoon Han, and Seungmoon Choi, "Merging Camera and Object Haptic Motion Effects for Improved 4D Experiences," In Proceedings of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR), pp. 1036-1044, October 16-20, 2023.
- Gyeore Yun, Minjae Mun, Jungeun Lee, Dong-Geun Kim, Hong Z Tan, and Seungmoon Choi, "Generating Real-Time, Selective, and Multimodal Haptic Effects from Sound for Gaming Experience Enhancement," In Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI), Article No. 315, pp. 1-17, April 23-28, 2023.
- Chaeyong Park, Jeongwoo Kim, and Seungmoon Choi, "Visuo-haptic Crossmodal Shape Perception Model for Shape-Changing Handheld Controllers Bridged by Inertial Tensor," In Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI), Article No. 699, pp. 1-18, April 23-28, 2023 (Honorable Mention).
- Junwoo Kim*, Heeyeon Kim*, Chaeyong Park, and Seungmoon Choi, "Human Recognition Performance of Simple Spatial Vibrotactile Patterns on the Torso," In Proceedings of the IEEE World Haptics Conference (WHC), pp. 20-27, July 9-12, 2023 (* Co-first authors).





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Education	▪ Ph.D.	KAIST (2001)	
	▪ M.S.	KAIST (1996)	
	▪ B.S.	Kyungpook National University (1994)	
Career	▪ 2005.8-2006.8	Post-Doctoral Fellow, IBM Almaden Research Center (worked on progressive optimization in the parallel DB2 DBMS)	
	▪ 2008.1-2012.8	Director, Institute of IT-Gifted Youth, Kyungpook National University	
	▪ 2003.3-2013.7	Associate Professor (Tenured), Kyungpook National University	
	▪ 2013.7-Present	Full Professor, POSTECH	

Research Overview

We have been focusing on big data, databases, mining, and AI related research.

Our goal is to build scalable, intelligent Big data systems that effectively and efficiently deal with Big data. Most of Big data is unstructured data, and thus, it is difficult to handle. We are building a system for converting unstructured data into semi-structured data in a graph form so that it can be easily handled in our parallel graph engine. We are also building an intelligent system to interact with humans.

Research Areas

- Natural Language Interface to Database (NLIDB)
- Large-scale Video Query Processing
- Parallel Computation System for Big Data Analysis on Modern Hardware
- Large-scale Graph Computation System
- Intelligent Computation Systems for Structured and Dark Data

Major Achievements

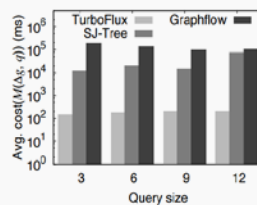
- Ultrafast Graph Analytics Engines for Trillion-scale Graphs
- Frameworks for Graph Pattern Matching
- Parallelizing Query Optimization Exploiting the Multi-core Architecture
- Progressive Query Optimization in a Shared Nothing Parallel DBMS (inside IBM DB2)
- Tight Integration of Database and Information Retrieval

Honors and Awards

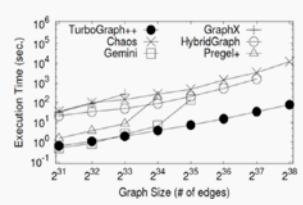
- Scientist of the Month Award, Ministry of Science, ICT and Future Planning, August, 2016
- Oracle External Research Office Award (unrestricted gift: \$580,000), 2014~2020
- VLDB 2010, selected as best of VLDB, 2010 (iGraph paper)
- ACM CIKM Distinguished Service Award, 2009
- Best Demonstration Award, IEEE Int'l Conf. on Data Engineering (ICDE), April 2005

Recent Publications

- Han, M., Kim, H., Gu, G., Park, K., and Han, W., "Efficient Subgraph Matching: Harmonizing Dynamic Programming, Adaptive Matching Order, and Failing Set Together," In ACM SIGMOD, 1429-1446, 2019. (Corresponding author)
- Kim, K., Seo, I., Han, W., Lee, J., Hong, S., Chafi, H., Shin, H., and Jeong, G., "TurboFlux: A Fast Continuous Subgraph Matching System for Streaming Graph Data," In ACM SIGMOD, 411-426, 2018. (Corresponding author)
- Ko, S., and Han, W., "TurboGraph++: A Scalable and Fast Graph Analytics System," In ACM SIGMOD, 395-410, 2018. (Corresponding author)
- Lee, J., Moon, S., Kim, K., Kim, D., Cha, S., Han, W., Park, C., Na, H., and Lee, J., "Parallel Replication across Formats in SAP HANA for Scaling Out Mixed OLTP/OLAP Workloads," In VLDB/PVLDB, 10(12), 1598-1609, 2017. (Corresponding author)
- Kim, H., Lee, J., Bhowmick, S., Han, W., Lee, J., Ko, S., and Jarrah, M., "DualSim: Parallel Subgraph Enumeration in a Massive Graph on a Single Machine," In ACM SIGMOD, 1231-1245, 2016. (Corresponding author)
- Lee, J., Shin, H., Park, C., Ko, S., Chun, Y., Noh, J., Stephan, W., and Han, W., "Hybrid Garbage Collection for Multi-Version Concurrency Control in SAP HANA," In ACM SIGMOD, 1307-1318, 2016. (Corresponding author)



Performance Evaluation of TurboFlux



Performance Evaluation of TurboGraph++



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Education

▪ **Ph.D.** KAIST (2013)
 ▪ **M.S.** KAIST (2002)
 ▪ **B.S.** KAIST (2001)

Career

▪ **2016-Present** Associate Editor, Proceedings of ACM on Interactive, Mobile, Wearable, Ubiquitous Technologies (IMWUT)
 ▪ **2013-2014** Research Assistant Professor, KAIST
 ▪ **2014-2020** Research Staff Member, IBM (USA)
 ▪ **2020-Present** Assistant Professor, POSTECH

Research Overview

Our mission is to create novel human-centered computing systems and applications to advance real-life human abilities and experiences, at the intersection of mobile & pervasive computing, human-computer interaction, and applied machine learning. In these areas, our research is an interdisciplinary ensemble of computing systems and real-life human factors, including physical, emotional, cognitive & social aspects. From systems perspective, we think-ahead, design, and optimize next-generation mobile/edge platforms to effectively and creatively serve newly emerging real life-driven computing workloads and user requirements. From applications & human-factor perspective, we are enthusiastic about disturbing our real-life problems by building, deploying, and evaluating first-of-a-kind computing applications in various application domains of (but not limited to) health & wellbeing, family & childcare, aging & generational issues, and supporting underrepresented groups.

Research Areas

- Human-Computer Interaction
- Mobile & Ubiquitous Computing
- Applied AI

Major Achievements

- Mobile-Cloud Platform for Infrastructure-less Massive Crowd Visualization (feat. in NewScientist & IBM Research Blog, 2017)
- Zero-effort Autonomous Robotic Telepresence System
- Wearable Pervasive Care Service for Language Development Disorder (feat. in NewScientist, 2014)

Honors and Awards

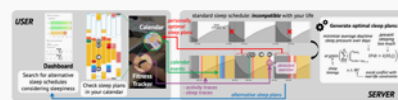
- Best Paper Award, ACM CSCW '14
- Best Demo Awards, ACM MobiSys '19 & '20
- Best Poster Runner-up, ACM HotMobile '20
- Honorable Mention, ACM CHI '14
- Distinguished TPC Member Awards, IEEE INFOCOM '16-'20
- IBM Master Inventor (2016-)
- IBM Invention Achievement Awards: 1st-21st Plateau, '15-'20

Recent Publications

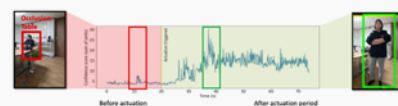
- Jungeun Lee, Suwon Yoon, Kyoosik Lee, Eunae Jeong, Jae-Eun Cho, Wonjeong Park, Dongsun Yim, Inseok Hwang. "Open Sesame? Open Salami! Personalizing Vocabulary Assessment-Intervention for Children via Pervasive Profiling and Bespoke Storybook Generation." ACM CHI 2024
- Jiha Kim, Younho Nam, Jungeun Lee, Young-Joo Suh, Inseok Hwang. "ProxiFit: Proximity Magnetic Sensing using a Single Commodity Mobile toward Holistic Weight Exercise Monitoring." ACM UbiComp 2023
- Sungjae Cho, Yoonsu Kim, Jaewoong Jang, Inseok Hwang. "AI-to-Human Actuation: Boosting Unmodified AI's Robustness by Proactively Inducing Favorable Human Sensing Conditions." ACM UbiComp 2023
- Jungeun Lee, Sungnam Kim, Minki Cheon, Hyojin Ju, JaeEun Lee, Inseok Hwang. "SleepGuru: Personalized Sleep Planning System for Real-life Actionability and Negotiability." ACM UIST 2022
- Bumsoo Kang, Seungwoo Kang, Inseok Hwang. "MomentMeld: AI-augmented Mobile Photographic Memento towards Mutually Stimulatory Inter-generational Interaction video" ACM CHI 2021
- Wonjung Kim, Seungchul Lee, Youngjae Chang, Taegyeong Lee, Inseok Hwang, Junehwa Song. "Hivemind: Social Control-and-Use of IoT towards Democratization of Public Spaces." ACM MobiSys 2021



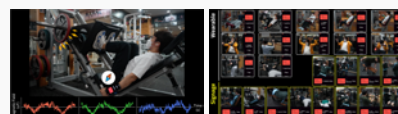
OSOS: Personalized Language Assessment and Education with LLMs and Pervasive Speech Profiling (ACM CHI24)



SleepGuru: Personalizing Healthy Sleep with Real-Life Actionability & Negotiability (ACM UIST'22)



AI-to-Human Actuation: Inducing Favorable Sensing Conditions for AI Robustness (ACM UbiComp'23)



ProxiFit: Proximal Magnetic Sensing for Holistic Mobile Weight Exercise Monitoring (ACM UbiComp'23)