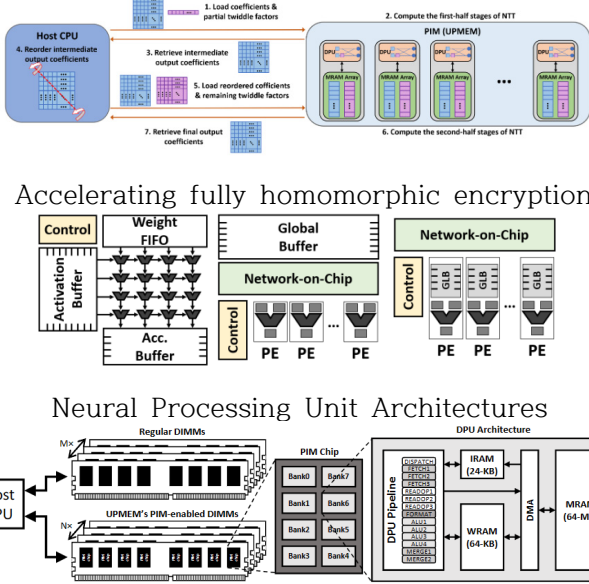


2023

School of EE Lab Introductions

Computer

KAIST EE

<h2 style="text-align: center;">Computer Systems and Network Lab</h2>	<p>■ Contact information</p> <p>Professor : jjk12@kaist.edu TEL : 042-350-7735 Lab. : N1-518 TEL : 042-350-7548 Website : https://icn.kaist.ac.kr</p>
<p>■ Current state of the Lab. (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows: 0 PhD Students: 8 Master's Student:: 7</p>	
<p>■ Research Areas</p> <ul style="list-style-type: none"> ● Computer and System Architecture for Deep Learning <ul style="list-style-type: none"> - Scale-out interconnection networks - Efficient communication-centric architecture for accelerators ● Memory-centric Network Architecture <ul style="list-style-type: none"> - Memory-centric network architecture for machine learning - Processing-in-memory (PIM) Architectures ● Architecture and Security <ul style="list-style-type: none"> - Side-channel attacks in CPU and GPU - Fully homomorphic encryption (FHE) ● Mobile System for Continuous Monitoring and Intervention <ul style="list-style-type: none"> - Monitoring Itching condition - Language Development 	 <p style="text-align: center;">Accelerating fully homomorphic encryption</p> <p style="text-align: center;">Neural Processing Unit Architectures</p> <p style="text-align: center;">Processing-in-Memory Architectures</p>
<p>■ Recommended courses & Career after graduation</p> <p>Courses recommended include topics related to computer architecture, system programming, distributed systems, and operating systems. Students in the lab have participated in internship at Samsung, NVIDIA, and Deep Learning start-ups. After graduation, students have become professors at POSTECH, Kangwon University, as well as joined industry including Samsung Research, Arm Inc, as well as research positions at National Research Labs.</p>	<p>■ Introduction to other activities besides research</p> <p>The lab provides a very open environment where you are encouraged to freely discuss with the professor and other students. We encourage collaboration with other professors in the department, within KAIST, as well as other institutions. We also actively collaborate with industry as well. We also encourage extracurricular activities to provide the best environment.</p>
<p>■ Introduction to the Lab.</p> <p>The Computer Systems and Network Lab is led by Prof. John Kim at KAIST. Prof. John Kim graduated from Stanford University and was part of School of Computing at KAIST before joining School of Electrical Engineering. He has worked on the design of several microprocessors in the industry (Intel, Motorola) and has worked on the design of interconnect at Cray Inc. Currently, the lab addresses the system and architectural design challenges in high performance computing as well as mobile systems. All research in the lab target publications in top-tier conferences in systems and architecture.</p>	
<p>■ Recent research achievements ('21~'23)</p> <p>The research group publishes in top-tier conferences, including architecture (ISCA, MICRO, HPCA, ASPLOS) and top-tier conferences in other domains, including CHI, CCS, Usenix Security, UBIComp, CSCW. Recent publications include</p> <ul style="list-style-type: none"> - ISCA'23 Decoupled SSD: Rethinking SSD Architecture through Network-based Flash Controllers - HPCA'23 VVQ: Virtualizing Virtual Channel for Cost-Efficient Protocol Deadlock Avoidance - HPCA'23 Logical/Physical Topology-Aware Collective Communication in Deep Learning Training - MICRO'22 Networked SSD: Flash Memory Interconnection Network for High-Bandwidth SSD - ISCA'22 Dynamic global adaptive routing in high-radix networks 	



SMart and MobILE Systems (SMILE) Lab

■ Contact information

Professor : songmin@kaist.ac.kr TEL : 042-350-7453
Lab. : smilelabkaist@gmail.com TEL : 042-350-7653
Website : <https://smile.kaist.ac.kr>

■ Current state of the Lab. (in 2023 Fall Semester)

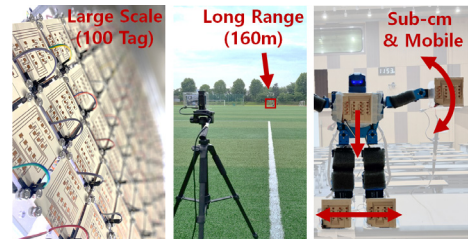
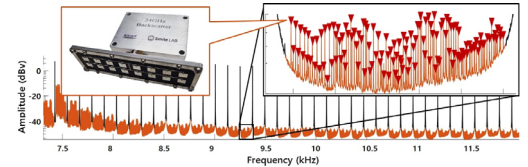
Postdoctoral Fellows : 0 PhD Students: 8 Master's Student: 2

■ Research Areas

Millimeter Wave 5G/6G Wireless Network: With 100 Gbps speed, mmWave is a key to heavy-traffic future applications such as virtual and augmented reality. We aim at realizing such services while tackling the unique issues of mmWave (e.g., blockage and high attenuation). Our research targets to achieve high throughput, long distance and low power consumption by innovative hardware and network protocols.

Batteryless Internet of Things: IoT without batteries is critical for (1) massive and pervasive IoT deployment and (2) a greener world. We design systems and algorithms for extremely low-power IoT operated by power harvesters (e.g., Solar-cell, RF, vibration).

Artificial Intelligence of Things: AI (training + inference) on low-power and low-cost IoT systems is a vital component for sustainable smart homes and healthcare applications. To realize this, we design efficient AI embedded systems (e.g., wearables) and algorithms with minimum computation, actuation, and sensing overheads, while achieving high accuracy.



■ Recommended courses & Career after graduation

Computer networks, network programming, system programming, probability theory, wireless communication and signal processing would be helpful (not required). You will have both top quality publications and rich experience in system implementation, offering freedom in career path: From academia and research labs to industry.

■ Introduction to other activities besides research

International trips to top conferences, get-together parties, and more. Any new suggestions are welcome. We are open to all kinds of new and fun activities! We value the relationship among members. As an academic family, we should be the strongest supporter for each other throughout the career.

■ Introduction to the Lab.

We are recruiting in the areas of (i) wireless networks and communication (ii) RF systems (iii) A.I. on edge devices! Please contact us if you are passionate in one or more of these areas.

Our research is about innovation and practicality. We enjoy creative and interesting designs and seeing it work in practice through hands-on implementation on everyday devices, such as smartphones and wearables. Our ideas lie in the intersection of networking, communications, and signal/data processing. We share our excitement with the world by publishing in top conferences. **SMILE lab is looking for enthusiastic students to join our journey!** If interested, please do not hesitate to contact Prof. Kim at songmin@kaist.ac.kr

■ Recent research achievements ('18~'23)

Many top conference and premier journal papers: MobiCom, SenSys, MobiSys, ICDCS, INFOCOM, USENIX Security, TON, TCOMM, TMC, and TOSN. Most students have published top conference papers within the first two years after joining, thanks to their hard-work. A student was nominated **MobiSys'22 Best Paper Award (2/176)**, the second time in history from an Asian university. This work was selected as **SIGMOBILE Reseach Highlight**. Another student was nominated **ICDCS'18 Best Paper Award (1/378)**. For details and videos please visit <https://smile.kaist.ac.kr>

<h1>System Security Lab (SysSec)</h1>	■ Contact information Professor : yongdaek@kaist.ac.kr TEL : 042-350-7430 Lab. : syssec@kaist.ac.kr TEL : 042-350-7430 Website : http://syssec.kaist.ac.kr
■ Current state of the Lab. (in 2023 Fall Semester) Postdoctoral Fellows : 0 PhD Students: 14 Master's Student: 7	
■ Research Areas o Security of Drones, Self-Driving Cars, and Embedded Devices Security of all layers of Cyber Physical Systems (CPSs) such as drones, self-driving cars and embedded devices is one of the major research pillars. We have shown that EMI injection on analog sensing circuits of can manipulate actuation (to stop pacemaker). This paper is known to be the 1 st sensor security paper. Since then, we have been leading sensor security research. Examples include dropping drone using sound (by causing resonance in gyroscopic sensors), causing over- and under-infusion in medical infusion pumps, faking and disabling LIDAR used for self-driving cars, faking and disabling fire detection sensor, hijacking drones using GPS spoofing. We also investigate communication channels of frequency hopping drones. To support fuzzing without hardware, we show how one can emulate firmwares automatically. Currently, we are exploring more advanced anti-drone technologies as well as security of self-driving cars. o Security of Cellular Technologies We use 4G and 5G cellular networks everyday. We have shown that these cellular technologies are not secure. In terms of cellular security research, our lab is known to be #1 in the world. <ul style="list-style-type: none">• Security Testing: Cellular standard does not include security testing causing many implementation vulnerabilities. We have developed testing tools for VoLTE, LTE core networks and smartphone modems. Using these tools, we found and reported several hundred vulnerabilities of commercial smartphones and operating cellular networks in Korea and the US. We also investigate how one can diagnose performance bugs as well.• Cellular Privacy: In 2012, we showed that 2G and 3G networks leak location information. In 2018, we showed that 4G also leaks location information. In 2022, we show that one can track which video a victim is watching.• Voice phishing: In 2021, Korea lost 0.7 Billion USD due to voice phishing. We have received funding from Korean police to develop technologies for track, prevent, and mitigate voice phishing.	
■ Recommended courses & Career after graduation As SysSec lab works in broad area, any kind of expertise are welcomed. In general, strong computer system (e.g. networking, OS, security, etc.), theoretical (cryptography, mathematics, information theory, etc) or electrical engineering (circuits, wave, signal processing) skills are all welcomed. Graduates are currently working for the academia (Sungkyunkwan Univ., Kansas State, Univ of Central Florida, Liberty Univ), research institute (Qualcomm research, Samsung Research, National Security Research Institute, Electronics and Telecommunication Research Institute), companies (Samsung, LG, Naver, SDS, Microsoft), and start-ups (Looxid Labs, Theori, Krust, S2W).	■ Introduction to other activities besides research Attend one international conference participation per year on average. Frequent (un)official get-together's. Extra money through bug bounties.
■ Introduction to the Lab. Professor Yongdae Kim has been working on security for nearly 30 years. (21 years as a professor = 11 years at KAIST + 10 years in Univ of Minnesota). His paper was cited nearly 10,000 times (the most cited security professor in Korea). His work is very well-known internationally. He has been invited to companies (e.g. Qualcomm, Microsoft, Google, Samsung, SKT), research labs and government to give a talk or consult. SysSec lab has students from both the School of Electrical and Electronics Engineering and the Graduate School of Information Security.	
■ Recent research achievements ('21~'23) <ul style="list-style-type: none">- LTESniffer: An Open-source LTE Downlink/Uplink Eavesdropper, 16th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec '23)- Un-Rocking Drones: Foundations of Acoustic Injection Attacks and Recovery Thereof, Network and Distributed Systems Security Symposium (NDSS '23)- Preventing SIM Box Fraud Using Device Fingerprinting, Network and Distributed Systems Security Symposium (NDSS '23)- Paralyzing Drones via EMI Signal Injection on Sensory Communication Channels, Network and Distributed Systems Security Symposium (NDSS '23)- Revisiting binary code similarity analysis using interpretable feature engineering and lessons learned, IEEE Transactions on Software Engineering (IEEE TSE '22)- Watching the Watchers: Practical Video Identification Attack in LTE Networks, USENIX Conference on Security Symposium (USENIX Security '22)- DoLTest: In-depth Downlink Negative Testing Framework for LTE Devices, USENIX Conference on Security Symposium (USENIX Security '22)- Enabling the Large-Scale Emulation of Internet of Things Firmware With Heuristic Workarounds, IEEE Security & Privacy (IEEE S&P '21)- BaseSpec: Comparative Analysis of Baseband Software and Cellular Specifications for L3 Protocols, Network and Distributed Systems Security Symposium (NDSS '21)	

Contact information

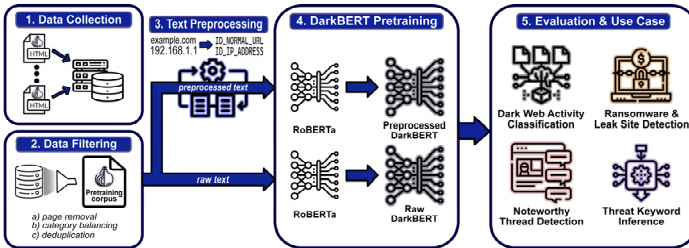
Professor : ITC Building (N1-910) TEL : 042-350-8323
 Lab. : ITC Building (N1-919) TEL : 042-350-7538
 Website : <http://nss.kaist.ac.kr>

Current state of the Lab. (in 2023 Fall Semester)

PhD Students: 13 Master's Student: 2

Research Areas

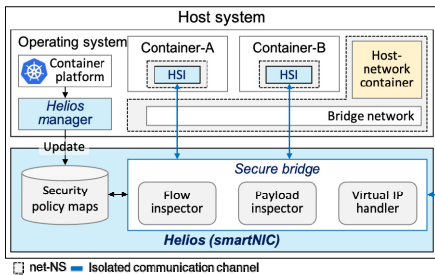
1) Large Language Model (LLM) Security



The Dark Web has always been a domain of interest for cybersecurity researchers looking to gain insight into emerging cybercriminal activities such as scams, malware, etc. We perform textual analysis on the dataset to uncover unique characteristics on how language might be used in the Dark Web, such as underground slangs and jargons. The insights gained on the language used in the Dark Web are then used to create DarkBERT, a

language model pretrained on Dark Web data. We design multiple new use case scenarios on cybercriminal activities in the Dark Web to illustrate the benefits that DarkBERT can offer in Dark Web research.

2) Cloud/Container Security



Recently, containerization has emerged as the predominant paradigm for cloud-based virtualization. Notwithstanding its widespread adoption, the incorporation of containers has expanded the potential attack vectors, rendering cloud systems susceptible to compromises. In response to this challenge, our research endeavors to introduce various security systems tailored for container-based cloud systems. Specifically, we ensure strict isolation of both inter-containers and between the host and its containers to enhance system-level security. Also, our focus extends to inspecting and orchestrating container communication, a critical component of network-level security.

3) Cyber Threat Intelligence

As NFTs continue to grow in popularity, NFT users have become targets of NFT stealers, called NFT drainers. Although their presence remains a serious threat to the NFT trading space, no work has yet comprehensively investigated their behaviors in the NFT ecosystem. This research aims to collect large-scale NFT transaction data and analyze behavioral patterns of drainers targeting NFTs. Based on the analysis, we design an automatic drainer detection system, called DRAINLoG, that uses GNN to effectively capture the complex relationships in the NFT ecosystem.

Recommended courses & Career after graduation

The recommended courses include computer networks, network programming, operating system, system programming, machine learning. Most graduates were employed by global IT companies or appointed as professors at domestic universities.

Introduction to other activities besides research

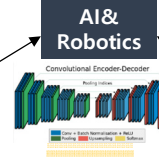

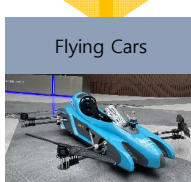

We aim for stress-free life, and studies can be done with no bounds on time and place. Additionally, every member of our laboratory is encouraged to partake in a variety of group sports activities (e.g., football, swimming, and table tennis) fostering both physical wellness and team cohesion.

Introduction to the Lab.


We take pride in our significant academic contributions to top-tier conferences within the domains of security, machine learning, and systems. All of the lab members are suggested to read their research project and to submit a paper to a conference or journal even a master's degree student. Furthermore, we provide various research facilities generously.

Recent research achievements ('21~'23)


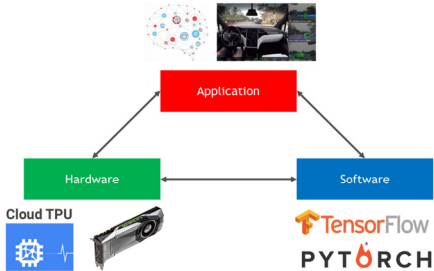
- [1] PassREfinder: Credential Stuffing Risk Prediction by Representing Password Reuse between Websites on a Graph, IEEE S&P 2024 (to appear)
- [2] HELIOS: Hardware-assisted High-performance Security Extension for Cloud, ACM SoCC 2023
- [3] Cryonics: Trustworthy Function-as-a-Service using Snapshot-based Enclaves, ACM SoCC 2023
- [4] Evolving Bots: The New Generation of Comment Bots and their Underlying Scam Campaigns in YouTube, IMC, 2023
- [5] AVX Timing Side-Channel Attacks against Address Space Layout Randomization, DAC, 2023
- [6] DarkBERT: A Language Model for the Dark Side of the Internet, ACL, 2023

 <p>USRG Unmanned Systems Research Group</p> 	<p>■ Contact information</p> <p>Professor : D. Hyunchul Shim(심현철) TEL : 042-350-7445 Lab:Unmanned Systems Research Group(무인시스템연구실) Website : http://unmanned.kaist.ac.kr</p>	
<p>■ Current state of the Lab. (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows : 0 PhD Students: 11 Master's Student: 10</p>		
<p>■ Research Areas</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>PIBOT</p> </div> <div style="text-align: center;">  <p>AI & Robotics</p> </div> <div style="text-align: center;">  <p>Delivery Robot with Manipulator</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  <p>UAV</p> </div> <div style="text-align: center;">  <p>Flying Cars</p> </div> <div style="text-align: center;">  <p>UGV</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  <p>EureCars</p> </div> <div style="text-align: center;">  <p>High-speed Autonomous Vehicles</p> </div> </div>		
<p style="text-align: center;">Autonomous Flight</p> <ul style="list-style-type: none"> In-house flight controller Drone swarms 3D SLAM based Indoor flight for DARPA Subterranean Challenge Anti-drone Tech Korea RPAS Research Center 	<p style="text-align: center;">Multidisciplinary Research</p> <ul style="list-style-type: none"> AI-equipped General Purpose Humanoid Robot (Pibot) Fully autonomous flying car Automation of vehicles using Humanoid robots 	<p style="text-align: center;">Autonomous Driving</p> <ul style="list-style-type: none"> In-house fully autonomous driving Indy Autonomous Challenge Deep learning-based sensing and decision making End-to-end Self-driving Delivery Robots
<p>■ Recommended courses & Career after graduation</p> <p>We welcome backgrounds in robotics, control, computer vision, AI, and basic linux knowledge. Our alumni have joined NASA Jet Propulsion Laboratory(3), Hyundai Supernal(1), LG Electronics(2), Naver Labs(1) 42.com(2) and Hyundai Motors(2), ETRI, ADD, KARI, KETI. MIT (Ph.D.), TU Delft(Ph.D) and more.</p>	<p>■ Introduction to other activities besides research</p> <p>We are committed to the excellency of intelligent aerial and ground robots research. We are participating in various drone and self-driving car related competitions such as AI Grand Challenge, Hyundai Motor Company, and most notably, Indy Autonomous Challenge. Yes, we do go to nice group dinners at fancy places too!!</p>	
<p>■ Introduction to the Lab.</p> <p>Our lab focuses on the research and development of robots that work in the real world. Our lab has been well-funded and equipped, and students will be given with a lot of opportunities to pursue cutting-edge AI&Robotics research. We have six autonomous cars (including one Indy race car), 2 full-size aircraft, 3 ground station trucks, 1 DGX station, Optitrack, 200+ drones, and much more.</p>		
<p>■ Recent research achievements ('21~'23)</p> <p>We won 1st Prizes at Hyundai Autonomous Vehicle Competition('21) and Korean Army Dronebot Challenge('22). Prof. Shim received Minister Award from Ministry of Science and ICT('21) and International Collaboration Award from KAIST('22). Our Alum Dr. Chanyoung Jung received outstanding paper award from School of EE, KAIST('23). We have been a strong contender at Indy Autonomus Challenges.</p>		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">   </div> <div style="width: 45%;">  <p>정찬영 지도교수: 심현철 자율 레이싱을 위한 시스템 설계 및 계층적 정책을 이용한 모방 학습 기법 Towards Fully Autonomous Racing: System Design for the Indy Autonomous Challenge and Imitation Learning Approach using Hierarchical Policy Abstractions</p> </div> <div style="width: 45%;">   </div> </div>		

<Professor Youjip Won's Lab.>

	■ Contact information Professor : ywon@kaist.ac.kr TEL : 042-350-7456 Lab. : TEL : 042-350-7613 Website : https://oslab.kaist.ac.kr
■ Current state of the Lab. (in 2023 Fall Semester) Postdoctoral Fellows : 0 PhD Students: 8 Master's Student: 8	
■ Research Areas <p style="text-align: center;">We hack.</p> <ol style="list-style-type: none">1. Operating System Design We overhaul the operating system kernel for performance and scalability under newly emerging hardware; manycore system, ultra-low-latency storage device and byte-addressable non-volatile memory. We redesign the memory management module, the filesystem, the block device layer and the storage device firmware for manycore and Ultra-low-latency storage device.2. Bigdata system We optimize the big-data storage engine such as MongoDB, Rocksdb and levelDB. The log-structured merge and graph DB lie at the core of the key-value management system. These data structures cannot well be used in large scale big data system due to its frequent storage interaction and flush overhead. Industry and academia altogether seek for a new solution to meet the demand from the big-data application.3. Machine Learning System The entire machine learning pipeline consists of data ingestion, data cleaning, data tagging, learning and inference. The current machine learning pipeline suffers from a fair amount of redundant data copies, the coarse grain CPU/graph scheduling, unnecessary synchronization among the heterogeneous GPU devices with widely different computing capability. As a system developer, we orchestrate the behaviors of the individual software components in the machine learning pipeline and eliminate all inefficiencies in the existing ML system.	
■ Recommended courses & Career after graduation <ul style="list-style-type: none">• Recommended courses to join the group: C/C++, Data Structure and Algorithms, Operating Systems• Career: Professor at academia, researcher at government funded research organization, system software developer at the software company such as Google, Facebook, at the smartphone manufacturers such as Samsung and LG, or at the semiconductor Industry such as Samsung and Intel	■ Introduction to other activities besides research <ul style="list-style-type: none">• Sports: The group members do lots of sporting activities together; including basket ball, swimming, running around campus, and going to the gym for workout a few times a week.• Travel: Each student has the opportunity to attend international conferences a few times a year (USENIX FAST, USENIX ATC, EuroSys and etc.).• Leisure: Once a month, the group members dine out and enjoy drinks together. We often visit an excellent beer pub near the KAIST campus to spend quality time.
■ Introduction to the Lab. <p>OSLab@KAIST is the world's leading research group at the forefront of operating system design for Flash storage and NVRAM. OSLab has been leading the IO stack optimization for the smartphone for several years. The techniques proposed by OSLab have been adopted by Google Android platform (Best Paper, USENIX ATC 2013). OSLab has also contributed numerous open-source tools that are widely utilized in Android research worldwide.</p> <p>One of OSLab's significant achievements is their successful proposal of a new IO subsystem design for Flash storage, which provides separate support for ordering guarantees (Best Paper, USENIX FAST 2018). Separating the ordering guarantee from the durability guarantee has been a long-standing challenge in the systems research community for more than 50 years.</p> <p>For passionate kernel developers and system hackers, OSLab offers an ideal environment to expand their limit and contribute to pioneering research.</p>	
■ Recent research achievements ('21~'23) International journals: 0, International conferences: 9, Domestic journals: 1, Domestic conferences: 0	

<Professor Minsoo Rhu's Lab>

 <p>Vertically Integrated Architecture (VIA) Research Group</p>	<p>■ Contact information</p> <p>Professor : Bldg. N1, #809 TEL : 042-350-7547 Lab. : Bldg. N1, #818 Website : https://sites.google.com/view/kaist-via</p>
<p>■ Current state of the Lab. (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows : 0 PhD Students: 10 Master's Student: 9</p>	
<p>■ Research Areas</p> <p>Vertically Integrated Architecture (VIA) research group conducts research in the domain of computer architecture with a vertically integrated approach. By co-optimizing VLSI circuit technology, computer system architecture, and application & algorithms (with an emphasis on machine learning and computer vision), our research mission is to build high-performance computing platform for future "intelligent" systems that are programmable, robust, reliable, secure, and energy-efficient.</p>	
<p>■ Recommended courses & Career after graduation</p> <ul style="list-style-type: none"> - Courses: computer architecture, data structures, system programming, digital logic design, compilers, operating systems, computer networks - Careers: During your graduate studies, we strongly encourage you to take internships in the industry (preferably in bleeding-edge IT companies like Google, Facebook, NVIDIA, Samsung, Microsoft, and Intel) so that you get practical, hands-on experience within the electrical and computer engineering discipline. 	<p>■ Introduction to other activities besides research</p> <p>Professor Rhu is a huge sports fan and encourages students to engage in extra-curricular activities as means to pursue a (mentally & physically) healthy graduate school life. We also encourage lab members to get together outside of the laboratory so that they maintain good social relationships with each other. There are frequent (un)official get-togethers and we plan on having regular team-building events during summer & winter breaks.</p>
<p>■ Introduction to the Lab.</p> <p>Professor Minsoo Rhu has spent three years working at NVIDIA Research as a Senior Research Scientist. He worked in several domains within the computer system stack, including ASIC designs, computer system architecture, runtime systems, and application & workload characterization with an emphasis on machine learning (ML) and computer vision (CV). As such, our research mission is to train students to become computer system architects that understands <i>both</i> the hardware and software system, enabling you to optimize any target application (e.g., ML or CV) for the underlying computing stack. Our group is currently funded by several <i>research-oriented</i> projects, for instance, the ERC-AI (by National Research Foundation), Neural Processor Research Center (by Samsung Research), Samsung Future Research Funding and Incubation Center for Future Technology, and others.</p>	
<p>■ Recent research achievements ('21~'23)</p> <p>[1] Ranggi Hwang*, Minhoo Kang*, Jiwon Lee, Dongyun Kam, Youngjoo Lee, and Minsoo Rhu, "GROW: A Row-Stationary Sparse-Dense GEMM Accelerator for Memory-Efficient Graph Convolutional Neural Networks," The 29th IEEE International Symposium on High-Performance Computer Architecture (HPCA-29), Montreal, Canada, Feb. 2023</p> <p>[2] Beomsik Park*, Ranggi Hwang*, Dongho Yoon, Yoonhyuk Choi, and Minsoo Rhu, "DiVa: An Accelerator for Differentially Private Machine Learning," The 55th IEEE/ACM International Symposium on Microarchitecture (MICRO-55), Chicago, IL, Oct. 2022</p> <p>[3] Yunjae Lee, Jinha Chung, and Minsoo Rhu, "SmartSAGE: Training Large-scale Graph Neural Networks using In-Storage Processing Architectures," The 49th IEEE/ACM International Symposium on Computer Architecture (ISCA-49), New York, NY, June 2022</p> <p>[4] Youngeun Kwon and Minsoo Rhu, "Training Personalized Recommendation Systems from (GPU) Scratch: Look Forward not Backwards," The 49th IEEE/ACM International Symposium on Computer Architecture (ISCA-49), New York, NY, June 2022</p> <p>[5] Youngeun Kwon, Yunjae Lee, and Minsoo Rhu, "Tensor Casting: Co-Designing Algorithm-Architecture for Personalized Recommendation Training," The 27th IEEE International Symposium on High-Performance Computer Architecture (HPCA-27), Seoul, South Korea, Feb. 2021</p> <p>[6] Yujeong Choi, Yunseong Kim, and Minsoo Rhu, "LazyBatching: An SLA-aware Batching System for Cloud Machine Learning Inference," The 27th IEEE International Symposium on High-Performance Computer Architecture (HPCA-27), Seoul, South Korea, Feb. 2021</p>	

Data AI Lab	■ Contact information	
	Professor	jaemin@kaist.ac.kr N1, Room 914
	Website (Prof.)	https://jaeminyoo.github.io
	Website (Lab.)	https://dai.kaist.ac.kr

■ Current state of the Lab. (in 2023 Fall Semester)

Postdoctoral Fellows : 0 PhD Students: 0 Master's Student: 0

■ Research areas

1. Graph Neural Networks & Recommender Systems

- ♦ Graphs depict dynamic interactions between entities
- ♦ Recommender systems are a popular application of GNNs
 - User history is typically represented as a large graph

Q: *How can we design effective GNNs for noisy real-world data?*

Q: *How can we perform accurate graph-based recommendations?*

2. Self-supervised Anomaly Detection

- ♦ Anomaly detection (AD) aims to identify unseen anomalies
 - E.g., defect detection in manufacturing systems
- ♦ Self-supervised learning (SSL) enables a model to self-train using data augmentation without the need for labeled data

Q: *How can we develop effective SSL-based methods for AD?*

3. Multivariate Time Series Analysis

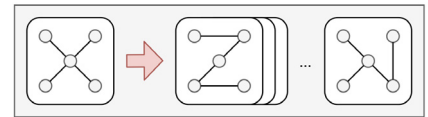
- ♦ Most time series data comprise multiple correlated variables
 - Stock prices, traffic patterns, sensor data, etc.
- ♦ Understanding such correlations or causalities is vital

Q: *How can we accurately learn and utilize these relationships?*

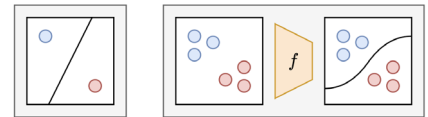
4. Interpretable, Scalable, and Robust ML

- ♦ Implementing ML models in real-world scenarios introduces numerous challenges, e.g., interpretability and scalability
 - Interpretability is crucial in areas like medicine or military

Q: *How can we design ML models for critical domains?*



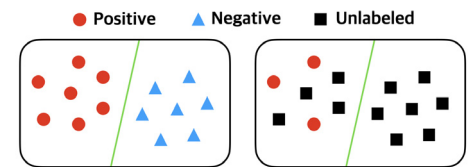
Model-agnostic graph augmentation



Baseline

Rich decision boundary learned by f

Fig 1. Graph augmentation



(a) Typical Supervised Learning

(b) PU Learning

Fig 2. Positive-unlabeled learning

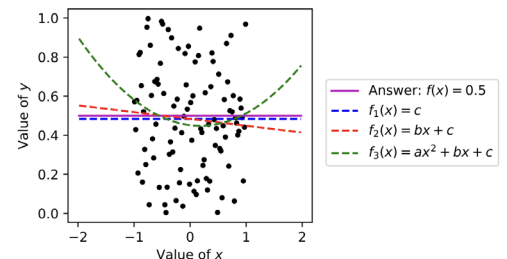


Fig 3. Strength of simplicity

■ Recommended courses & Career after graduation

- ♦ **Recommended courses:** Data structures, Algorithms, Linear algebra, Probability theory, Big data analytics
- ♦ **Career after graduation:** Software engineers, Data scientists, ML engineers, ML research scientists

■ Introduction to the Lab.

Our research group has just started in August 2023 when Prof. Jaemin Yoo began to work as an Assistant Professor in KAIST EE. Our primary goal is to enhance the generalizability and practicality of machine learning algorithms for real-world challenges, covering a variety of data representations and applications.

■ Recent research achievements (2020-2023)

- ♦ DSV: An Alignment Validation Loss for Self-supervised Outlier Model Selection. **ECML PKDD 2023**
- ♦ Less is More: SlimG for Accurate, Robust, and Interpretable Graph Mining. **KDD 2023**
- ♦ Accurate Node Feature Estimation with Structured Variational Graph Autoencoder. **KDD 2022**
- ♦ Model-Agnostic Augmentation for Accurate Graph Classification. **TheWebConf 2022**
- ♦ Accurate Graph-Based PU Learning without Class Prior. **ICDM 2021**
- ♦ Accurate Multivariate Stock Movement Prediction via Data-Axis Transformer. **KDD 2021**

Hacking Lab

Contact information
 Email: insuyun@kaist.ac.kr TEL : 042-350-7469
 Lab. : ITC Building (N1) 812
 Website : <https://hacking.kaist.ac.kr>

Current state of the Lab. (in 2023 Fall Semester)
 Postdoctoral Fellows : 0 PhD Students: 2 Master's Student: 5

Research Areas: Understanding hacking in a scientific manner!

Automatic bug finding:
How do hackers find vulnerabilities?

BaseComp: A Comparative Analysis for Integrity Protection in Cellular Baseband Software (Security '23)

Automatic exploit generation:
How do hackers build exploits?

HardsHeap: A Universal and Extensible Framework for Evaluating Secure Allocators. (CCS '21)

Offensive research:
What do real hackers do?

CVE-2023-3390: UAF on Linux Netfilter nftables
MFT_MSG_NEWRULE leads to LPE (Google KCTF '23)

Recent research achievements ('21~'23)

Faculty	# Pubs	Adj. #
Yongdae Kim SECURITY	6	1.0
Soeul Son SECURITY,WEB+IR	5	1.1
Min Suk Kang SECURITY	4	0.9
Insu Yun SECURITY	4	0.7
Insik Shin EMBEDDED,MOBILE	3	0.5
Seungwon Shin SECURITY	2	0.5
Sang Kil Cha SECURITY,SE	1	0.3
Kihong Heo PL,SE	1	0.3

3rd place (tie) in csranking.org (KAIST security research)


Introduction to other activities besides research

Hacking competition for fun & profit!

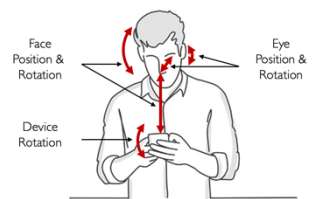
- News!**
- [07/17/2023] QSYM got a Frontiers of Science Award from ICSB!
 - [06/06/2023] BaseComp is accepted to Usenix Security'23!
 - [01/19/2023] \$7K Bug Bounty from Google (V8/CVE-2023-0696)
 - [11/11/2022] QueryX is accepted to IEEE S&P'23!
 - [11/04/2022] ScaleTrust is accepted to ToN'22!
 - [06/11/2022] FuzzCoin is accepted to RAID'22!
 - [09/04/2021] DoLTest is accepted to Usenix Security'22!
 - [07/21/2021] HardsHeap is conditionally accepted to CCS'21!


- Recommended courses**
- EE209 Programming Structures for Electrical Engineering
 - EE309: Advanced Programming Techniques for Electrical Engineering
 - EE415: Introduction to Operating System
 - EE517: Software Hacking Theory and Practice
 - EE515: Security of Emerging Systems
- Career after graduation (2 Alumni)**
- Postdoc @ Georgia Tech (PhD)
 - Security researcher @ S2W (MS)

Introduction to the Lab.
 Our lab is one of the best labs that study *hacking*. If you are interested in understanding and analyzing systems, finding vulnerabilities, and exploiting them, don't hesitate to contact us!

	<p>■ Contact information</p> <p>Professor : profsj@kaist.ac.kr TEL : 042-350-7413 Lab. : nmsl@kaist.ac.kr TEL : 042-350-7766 Website : https://nmsl.kaist.ac.kr</p>
<p>■ Current state of the Lab. (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows : 1 PhD Students: 8 Master's Student: 5</p>	
<p>■ Research Areas</p> <ul style="list-style-type: none"> ◆ Mobile computing (ubiquitous computing, mobile sensing, wearable computing, AR/VR) ◆ Mobile AI/ML (test time adaptation, domain adaptation, unsupervised learning, on-device ML, federated learning) ◆ Mobile Human-Computer Interaction (novel interaction methods, digital health and wellbeing, human/AI interaction) ◆ Wireless networking (networking for robots and drones, protocols for emerging spectrum, ML for networks) 	
<p>■ Recommended courses & Career after graduation</p> <ul style="list-style-type: none"> ◆ Recommended courses are: EE323 Computer Networks, EE331 Introduction to Machine Learning, EE415 Operating Systems and System Programming for Electrical Engineering. ◆ Career paths after graduation include (1) continuing studies in KAIST or overseas (e.g., MIT, University of Washington, Carnegie Mellon University), (2) working in tech giants (e.g. Google, Youtube, Nokia, Naver, Samsung Electronics, SK), (3) government research labs (e.g., Agency for Defence Development), and (4) start-ups. 	<p>■ Introduction to other activities besides research</p> <ul style="list-style-type: none"> ◆ We have various leisure activities to refresh the atmosphere in the lab as well as to build solid companionship among lab members. Strawberry parties, birthday parties, playing board games, playing online games, pilates exercises, playing futsal are examples. ◆ Our lab also has study groups and workshops to improve the skills needed for professional careers (e.g., writing, presenting, relationship management). ◆ We also offer international internship opportunities to institutes such as Carnegie Mellon University, Microsoft Research Asia, Nokia Bell-Labs Cambridge, Google, Cisco, Nanyang Technological University, and University of Buffalo.
<p>■ Introduction to the Lab.</p> <p>Networking and Mobile Systems Laboratory (NMSL) utilizes expertise in mobile computing, network systems, human-computer interactions, and machine learning to build innovative mobile services & applications. To enrich the quality of life of mobile users, we (i) identify challenging real-world problems, (ii) design novel solutions, protocols, algorithms, systems, applications, software, and interfaces, and (iii) build our solutions in working systems for practical validation and deployment. We are interested in interdisciplinary, high impact research, and seek collaboration with other academic research groups, industry and government worldwide.</p>	
<p>■ Recent research achievements ('21~'23)</p> <ul style="list-style-type: none"> ◆ Our lab has published in top international venues in mobile computing, machine learning, and human-computer interactions, such as NeurIPS, MobiSys, MobiCom, UbiComp, UIST, SenSys, CHI, CSCW, IEEE INFOCOM, as well as Transactions on Mobile Computing. ◆ Our Research has won awards at ACM CHI, ACM CSCW, and ACM MobiSys. 	

<h2 style="margin: 0;">Wearable and Interactive Technology Lab</h2>	<p>■ Contact information</p> <p>Professor : Ian Oakley TEL : 010-4531-6693</p> <p>Website : https://sites.google.com/view/kaist-witlab/</p>
<p>■ Current state of the Lab. (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows : 0 PhD Students: 0 Master's Student: 0</p>	
<p>■ Research Areas:</p> <p>WIT Lab conducts research on Human-Computer Interaction (HCI). Specifically:</p> <p>Sensing and Input for AR and VR: Smartglasses are an emerging computational platform that demands new input forms based on sensing finger and body motions and gestures. WIT Lab designs, develops, and evaluates novel interactive technology in this space for critical use scenarios such as typing, selection or navigation.</p> <p>Wearable Authentication: Wearable devices increasingly sense, store, or access sensitive user data or services relating to health, communications, or transactions. However, securing access to these devices poses new challenges regarding reliable entry of passcodes or the design of practical design and integration of biometric sensing. WIT lab develops novel systems and user studies behaviors during authentication to wearable devices.</p> <p>Digital Phenotyping: Smart and wearable devices have unprecedented capabilities to monitor their wearers. WIT Lab explores the user of novel data (e.g., gaze or other physiological signals) generated by mobile and wearable devices to detect key affective states, such as the feelings experienced during social media use, and how these may contribute to mental health issues, such as depression. Wearables have the potential to track our mental health, as well as our physical health.</p>	
<p>■ Recommended courses & Career after graduation</p> <p>KAIST offers a world-class environment in which to study HCI, with a network of faculty engaged in and around core HCI topics (https://hci.kaist.ac.kr/) and courses across CS, ID, GSCT and EE. HCI offers many opportunities for future careers, with burgeoning opportunities in academia, strong demand from established industry research labs (e.g., Google, Microsoft), and high relevance to most tech startups.</p>	<p>■ Introduction to other activities</p> <p>Lab members can expect to attend top international and national HCI conferences and have regular lab social events (organized mainly around lunches) and periodic workshop trips. We are a new lab and open to ideas - join us and propose and/or organize your own events and social activities!</p>
<p>■ Introduction to the Lab.</p> <p>WIT Lab was founded in August 2023. Grab an opportunity to join a rapidly growing lab as a founding member! We are recruiting! We're happy to speak to candidates interested in any area of HCI, but are currently focusing on sensing, input, and interaction design for wearable and augmented reality. Also, note that although we are a new lab, we are also a mature one - the lab builds on Professor Ian Oakley's 20+ years of experience as an HCI researcher and faculty member, so expect projects and publications to ramp up quickly. Come join us as we grow!</p>	
<p>■ Recent research achievements ('21~'23)</p> <p>We published five papers at ACM CHI and two papers at ACM IMWUT (Ubicomp). Come join our lab and contribute to top tier research in Human-Computer Interaction!</p>	



 Computer Architecture and Memory Systems Laboratory	Contact information		
	Professor	Email: m.jung@kaist.ac.kr	Tel: 042-350-7455
	Lab.	Email: kukdh1@kaist.ac.kr	Tel: 042-350-7555
	Website	http://camelab.org	

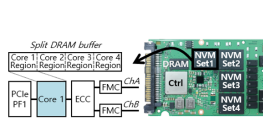
Research Areas

CXL Hardware and Software co-solution



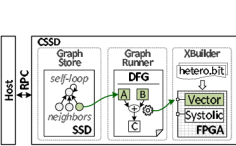
- Opening a new direction for memory disaggregation
- Ensuring direct accessible and high-performance capabilities

Kernel & Storage Architecture



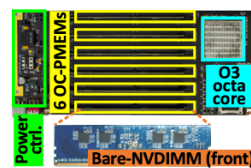
- High performance SSD architectures and firmware design
- In-memory processing and In-storage processing

Machine Learning with Storage/SCM



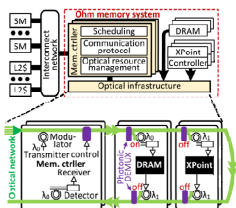
- Exploring ML algorithms to make system-related decisions
- Implementing hardware acceleration architectures using ML within Memory and storage

Next Gen. Non-Volatile Memory (NVM)



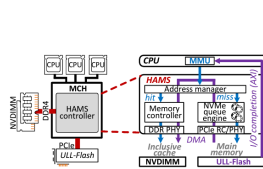
- Overcoming challenges of emerging NVMs such as RRAM and PRAM
- Architecting new platforms with byte-addressable NVMs

Heterogeneous Computing



- Researching energy-efficient heterogeneous computing with diverse devices
- Remove data movement by aggressively integrating memory with hardware accelerator

New Memory Computing



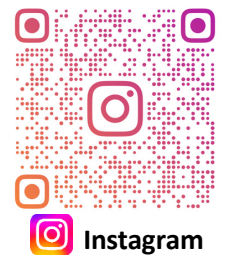
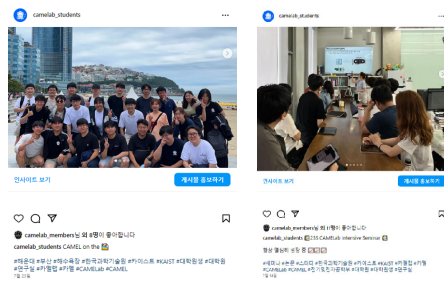
- New memory device design and implementation (e.g. Z-NAND, PRAM)
- Exploring a new territory to integrate new memory into domain specific accelerator

Recommended courses & Career after graduation

We recommend taking courses related to **operating systems (OS), system programming, computer architecture, machine learning and field programmable gate array (FPGA)**. It would be better to have experiences with simulators or benchmark tools. Though all those courses and experiences listed above aren't mandatory. About career, based on your will, Dr. Jung will support everything for you to get publications and to become a leading researcher at from industry to faculty jobs.

Introduction to other activities besides research

We regard horizontal and active communications as important. So, we often have mealtimes and talking time together. Now, we are moving forward together encouraging each other. In addition, we sometimes visit abroad to attend top-tier academic conferences. If you're interested, check out our lab's instagram. :) [@camelab_members](https://www.instagram.com/camelab_members)



Introduction to the Lab.

Professor Jung has advised his students at UT Dallas, Yonsei Univ. and now KAIST under support and collaborations with U.S. government organizations, industries (Intel, Western Digital, Sandisk, Samsung, SK Hynix, Memray) and institutions (UIUC, Georgia tech). Our lab have published many papers to top-tier conferences and gotten attention in many presses. We continue to target top-tier conference publications in a perfect environment for research.


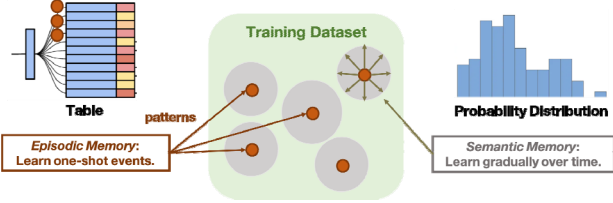

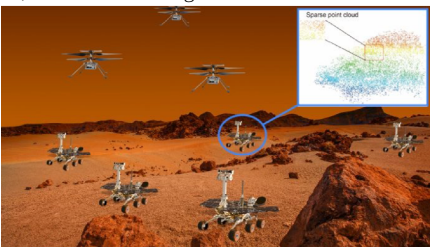


Recent research achievements (2012 - 2023)


- 42 publications in top-tier conferences. (Total 125 publications including major conferences and SCI journals.)
- Our system research is **ranked first** in Korea, according to the metrics-based system, CSRankings.
- 15 international articles, 102 domestic articles including **Korea major presses** and **Naver news headline**.
- 37 international and domestic patents.

<Professor Dongsu Han>

Intelligent Network Architecture and Distributed Systems Lab.	■ Contact information		
	Professor	Email: dhan.ee@kaist.ac.kr	Tel: 7431
	Lab.	Email: inalab@kaist.ac.kr	Tel: 7631
	Website	https://ina.kaist.ac.kr	
■ Current state of the Lab. (in 2023 Fall Semester)			
Postdoctoral Fellows : 0 PhD Students: 6 Master's Student: 4			
■ Research Areas			
<p>With more diverse applications and its requirements, we design/implement (1) the distributed system where such applications can be operated efficiently, and (2) the new possibility created with more interconnected computers.</p> <p>Cloud infrastructure: Currently, many applications and its infrastructure become more complex with advanced features. This trends will continue as technology advances. Accordingly, we are making network/cloud infrastructure more intelligent.</p> <p>Why cloud and distributed systems?: Cloud and distributed system is the key to realize computer's infinite possibility. You can reflect your vision into the software technology. New systems create new worlds and the new worlds require new systems. For example, big-data processing system becomes the infrastructure extracting "knowledge" from the raw data such as Google Search. Moreover, you can make current systems more efficient. For example, if mobile OS like Android can predict network performance in real time to show the YouTube video, it can reduce the delay to play the video, which create additional market value.</p>			
■ Recent research topics			
<ul style="list-style-type: none"> - Systems for AI: Optimizing the use of GPU resources and network bandwidth in hyper-scale training environment - AI for Systems: Microservice auto-scaling study, Accelerate DNA sequencing using the learned index - AI + Video: How will Deep Learning Change Internet Video Delivery? Adaptive streaming + neural super-resolution - Cloud computing and Big data processing: Resource allocation for cloud infrastructure, optimization with Big Data. - Internet-scale content distribution: Software-defined content distribution, QoE inferencing and optimization, diagnosis. - Future Internet architecture: Evolvable congestion control, evolvable service model, incremental deployment over IP. 			
■ Recommended courses & Career after graduation			
<p>We offer comfortable and active environment where you can discuss freely with other people including professor. We strongly recommend and support collaboration with other laboratories and intern experience from the industry. We are trying to establish the environment where each individual's advantage can make grater synergy. We support student's self-improvement, sports activities, extracurricular activities to provide best research environment to the students.</p> <p>We recommend you to take Computer Networks, Network Programming, System Programming, Operating System, Data Structure, and Discrete Structure courses. You will have ability to design, implement, and manage the new systems required in the future. You will experience a new world with new software systems and introduce them to the public. You will be a great software architect required by many industries and laboratories predicting and leading the new technology trend.</p>			
■ Introduction to other activities besides research			
<p>We offer comfortable and active environment where you can discuss freely with other people including professor. We strongly recommend and support collaboration with other laboratories and intern experience from the industry. We are trying to establish the environment where each individual's advantage can make grater synergy. We support student's self-improvement, sports activities, extracurricular activities to provide best research environment to the students.</p>			
■ Introduction to the Lab.			
<p>INA research group pursues innovative ideas in/for Internet services and applications, cloud infrastructure, and systems that support artificial intelligence. We identify and anticipate new problems that arise from the evolution of Internet-/Cloud-based services and the development of new hardware, provide novel solutions for challenging problems in the real-world, design and implement the solutions in a way that reaches out for real-world impact.</p>			
■ Recent research achievements (2022-2023)			
<p>Top research group at ACM SIGCOMM and USENIX NSDI in Korea (published 13 papers in the past 10 years)</p> <ul style="list-style-type: none"> - Co-optimizing for Flow Completion Time in Radio Access Network [CoNEXT 2022] - NeuroScaler: Neural Video Enhancement at Scale [SIGCOMM 2022] - TSPipe: Learn from Teacher Faster with Pipelines [ICML 2022] - BWA-MEME: BWA-MEM emulated with a machine learning approach [BioInformatics 2022] - AccelIR: Task-aware Image Compression for Accelerating Neural Restoration [CVPR 2023] 			

<p>Autonomous Control of Stochastic Systems (ACSS)</p>	<p>■ Contact information Professor : SooJean Han TEL : 042-350-7474 Lab. : ACSS Mobile : 010-4868-7883 Website : acss.kaist.ac.kr</p>
<p>■ Current state of the Lab. (in 2023 Fall Semester) *New faculty member as of August 2023.</p>	
<p>■ Research Areas control systems, stochastic processes, machine learning</p>	
<p>■ Recommended courses & Career after graduation</p> <p>*coding background: Python, MATLAB.</p> <p>*course background: calculus, ODEs, linear algebra, introductory machine learning, basic probability.</p> <p>*[Bonus] coding background: C++, ROS, working on GPUs.</p> <p>*[Bonus] course background: any control theory / control engineering course.</p> <p>*[Bonus] hardware background: robots/drones, motion capture system.</p> <p>Bonus backgrounds are not strictly required. Self-motivation and a determination to learn new skills is more important.</p>	<p>■ Introduction to other activities besides research</p> <p>My biggest motivation for being an engineer comes from movies! When I was a kid, I was inspired by the robots in Wall-E, especially EVE.</p> <p>If you want to help me build real-life autonomous systems like EVE, consider joining my lab :)</p> 
<p>■ Introduction to the Lab.</p> <p>We develop intelligent and efficient methods for control, estimation, and decision-making of stochastic systems. Our main applications include networked systems: traffic management of unmanned (aerial) vehicles, multi-agent robotics, and distributed sensor networks.</p> <p><u>Heterogeneous Memory for Decision-Making.</u></p> <p>We study the patterns of a system and design rules to determine what to store in memory and how to store them. By taking inspiration from the human brain, heterogeneous memory structures encode information in a diversity of ways (e.g., semantic versus episodic memory). Applications include autonomous robotic systems, reinforcement learning.</p>  <p><u>Topology of Multi-Agent Systems.</u></p> <p>We design ways to abstract the topology of a complex real-world network into spatial patterns (e.g., tessellations) to achieve faster communication and more optimal resource allocation. Applications include large-scale flow networks: vehicle congestion control, air traffic management and UAV formation-flight.</p>  <p><u>Distributed Data-Gathering with Feedback.</u></p> <p>We take inspiration from the human nervous system to improve distributed data-gathering algorithms: feedback channels are established from the processor to the individual sensors, enabling prediction and redundancy-reduction. Applications include problems where large-scale wireless communication is important: collaborative mapping of an unknown environment, multiagent target-tracking, distributed sensing and decision-making.</p> 	
<p>■ Recent research achievements ('21~'23)</p> <p>*Han, Chung, Doyle, "Predictive Control of Linear Discrete-Time Markovian Jump Systems by Learning Recurrent Patterns." Automatica, May 2023.</p> <p>*Han, Chung, Gustafson, "Congestion Control of Vehicle Traffic Networks by Learning Structural and Temporal Patterns." Learning for Dynamics and Control Conference (L4DC), Jun 2023.</p> <p>*Han, "Optimizing Accuracy and Efficiency in Distributed Data Gathering Architectures with Feedback." Sep 2022.</p> <p>*Han, Chung, "Incremental Nonlinear Stability Analysis for Stochastic Systems Perturbed by Lévy Noise." International Journal of Robust and Nonlinear Control (IJRNC), Aug 2022.</p> <p><For more, please visit personal homepage at soojean.github.io>.</p>	

<Professor Steven Euijong Whang's Lab>

 <p>Data Intelligence Lab</p>	<p>■ Contact information</p> <table border="1"> <tr> <td>Professor</td> <td>Email: swhang@kaist.ac.kr Tel: 042-350-7443</td> </tr> <tr> <td>Website</td> <td>https://stevenwhang.com</td> </tr> </table>	Professor	Email: swhang@kaist.ac.kr Tel: 042-350-7443	Website	https://stevenwhang.com
Professor	Email: swhang@kaist.ac.kr Tel: 042-350-7443				
Website	https://stevenwhang.com				
<p>■ Current state of the Lab (in 2023 Fall Semester)</p> <p>Postdoctoral Fellows: 0 PhD Students: 8 Master's Students: 4</p>					
<p>■ Research Areas</p> <p>Software 2.0 is a fundamental shift in software engineering where machine learning is prevalent and data becomes a first-class citizen, on par with code. The goal of the Data Intelligence Lab is to pioneer the inevitable trend of Responsible/Trustworthy AI, Data-centric AI, and Big Data – AI Integration. We are especially interested in solving fairness, robustness, privacy, and explainability challenges in machine learning from the data.</p> <div data-bbox="124 678 1453 1133"> </div>					
<p>■ Recommended courses & Career after graduation</p> <p>Recommended courses: Discrete mathematics, data structures, algorithms, databases, data mining, probability theory, linear algebra, convex optimization, and machine learning. Career after graduation: Students will be trained to be world-class researchers and have career opportunities both in industry and academia.</p>					
<p>■ Introduction to other activities besides research</p> <p>Students are encouraged to participate in extracurricular activities. For example, the professor likes swimming and is an alum of the KAIST swimming team KAORI. Our lab will also have regular social events.</p>					
<p>■ Introduction to the Lab</p> <p>The Data Intelligence Lab solves important problems in Data-centric AI and Responsible AI. We are funded by Google Research, Microsoft Research, Samsung Electronics, SK Hynix, the National Research Foundation of Korea (AI ERC), and the Institute of Information & communications Technology Planning & Evaluation (IITP) among others. Our lab has 8 PhD and 4 Masters students with internship experiences at Google DeepMind & Youtube and NVIDIA Research.</p> <p>Steven Euijong Whang is an associate professor at KAIST EE and AI. Previously he was a Research Scientist at Google Research and co-developed the data infrastructure of the TensorFlow Extended (TFX) machine learning platform. Steven received his Ph.D. in computer science in 2012 from Stanford University. He received a Google AI Focused Research Award (2018, the first in Asia) and was a Kwon Oh-Hyun Endowed Chair Professor (2020-2023).</p>					
<p>■ Recent research achievements ('21~'23)</p> <p>[1] Y. Roh, K. Lee, S. E. Whang, and C. Suh, "Improving Fair Training under Correlation Shifts", ICML 2023. [2] H. Zhang, K. Tae, J. Park, X. Chu, and S. E. Whang, "iFlipper: Label Flipping for Individual Fairness", ACM SIGMOD 2023. [3] G. Heo and S. E. Whang, "Redactor: A Data-centric and Individualized Defense Against Inference Attacks", AAAI 2023. [4] H. Hwang and S. E. Whang, "XClusters: Explainability-first Clustering", AAAI 2023. [5] S. E. Whang, Y. Roh, H. Song, and J. Lee, "Data Collection and Quality Challenges in Deep Learning: A Data-Centric AI Perspective", VLDB Journal, 2023.</p>					