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## RESEARCH INTERESTS

System Architecture, Cloud Computing, Distributed Systems, Heterogeneous Computing, Non-Volatile Memory Systems, Serverless Computing

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## EDUCATION

- **The University of Michigan** Ann Arbor, MI, USA  
*Ph.D. Student in Computer Science and Engineering* Sep 2021 – Present  
Advisor: Dr. Mosharaf Chowdhury
- **Korea Advanced Institute of Science and Technology (KAIST)** Daejeon, Republic of Korea  
*Master of Science in Computer Science (GPA: 3.98 / 4.30)* Mar 2016 – Feb 2018  
Advisor: Dr. Jaehyuk Huh
- **Sungkyunkwan University (SKKU)** Seoul, Republic of Korea  
*Bachelor of Science in Computer Engineering (GPA: 4.24 / 4.50)* Mar 2011 – Feb 2016

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## PUBLICATIONS

1. **Insu Jang**, Adrian Tang, Taehoon Kim, Simha Sethumadhavan, and Jaehyuk Huh. 2019. “**Heterogeneous Isolated Execution for Commodity GPUs.**” *International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, April 2019.

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## RESEARCH EXPERIENCE

- **Computer Architecture and Systems Lab, KAIST** Daejeon, Republic of Korea  
*Research Assistant (Advisor: Dr. Youngjin Kwon)* Jan 2020 – Jul 2020
  - **Infiniband RDMA**: Worked on studying RDMA and reproducing Hyperloop, an Infiniband RDMA framework that optimizes replicated transactions published in SIGCOMM’18.
- **Computer Architecture and Systems Lab, KAIST** Daejeon, Republic of Korea  
*Graduate Research Assistant (Advisor: Dr. Jaehyuk Huh)* Mar 2016 – Feb 2018
  - **Trusted Heterogeneous Execution Environment**: Worked on extending the protection of Intel SGX to heterogeneous devices connected to the system via PCIe architecture.
  - **Accelerating Machine Learning**: Worked on studying hardware architecture for machine learning.
- **Networking Lab, Sungkyunkwan University** Suwon, Republic of Korea  
*Undergraduate Research Assistant (Advisor: Dr. Hyunseung Choo)* May 2014 – Jul 2015
  - **Inaudible Sound Communication System**: Worked on implementing a data transmission system with inaudible sound over 20kHz frequency using commodity Android smartphones.
- **M2M Lab, Purdue University (Purdue/NIPA Capstone Program)** West Lafayette, IN, USA  
*Undergraduate Research Assistant (Advisor: Dr. Eric T. Matson)* Jul 2014 – Aug 2014
  - **Cooperative Fire Security System using HARMS**: Worked on implementing Human Agent Robot Machine Sensor (HARMS) message protocol for robot-based firefighting system.

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## PATENTS

1. **Insu Jang**, Taehoon Kim, and Jaehyuk Huh. “**Heterogeneous Isolated Execution for Commodity GPUs.**” *Republic of Korea Patent No. 10-2105760*. Filed June 19, 2018, Issued December 30, 2019.
2. **Insu Jang**, Songhee Ryu, Gyuhyeon Jeon, Hyun Lee, Myoungbeom Chung, and Hyeonseung Choo. “**Data Communication Method using Inaudible Frequency Band.**” *Republic of Korea Patent No. 10-1560798*. Filed February 23, 2015, Issued October 16, 2015.

## WORK EXPERIENCE

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- **TmaxSoft** Seongnam, Republic of Korea  
*System Software Engineer (Alternative Military Service)* Feb 2018 – Jun 2021
  - **Kubernetes:** Worked on implementing a container management system based on Kubernetes.
  - **Linux:** Worked on implementing system services using Linux low-level features, e.g. udev, netlink.
  - **Ceph:** Worked on analyzing Ceph distributed storage system.
- **Electronics and Telecommunications Research Institute (ETRI)** Daejeon, Republic of Korea  
*Research Intern* Jan 2016 – Feb 2016
  - **Hypervisor:** Worked on studying internal architecture of Xen hypervisor.
  - **Software Development Process:** Worked on studying Test Driven Development (TDD).
- **Advanced Institute of Convergence Technology (AICT)** Suwon, Republic of Korea  
*Research Intern* Jul 2015 – Aug 2015
  - **Apache Hadoop and Apache Spark:** Worked on studying distributed computing frameworks and internal architecture of Apache Hadoop and Apache Spark.
- **Samsung Software Membership (Student Program of Samsung Electronics)** Suwon, Republic of Korea  
*Student Member* Jan 2013 – Apr 2014
  - **Android:** Worked on implementing several Android applications.
  - **HTML5 and Javascript:** Worked on implementing several HTML5 based web applications.
  - Led several projects as a team leader.

## HONORS AND AWARDS

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- **University Ph.D. Fellowship** Sep 2021  
*The University of Michigan*
- **Korea National Scholarship** Mar 2016  
*KAIST and Korea Ministry of Science and ICT*
- **Korea National Scholarship for Science and Engineering** Mar 2014  
*Korea Student Aid Foundation and Korea Ministry of Education*
- **2nd Prize, 2015 Convergence App Contest** Dec 2015  
*College of Software, Sungkyunkwan University*
- **Dean's List** Oct 2014, Apr 2015  
*Department of Computer Engineering, Sungkyunkwan University*
- **1st Prize, 2013 Smart TV App and Peripherals Contest** Nov 2013  
*Korea Association of Smart Home and Korea Ministry of Trade, Industry and Energy*
- **1st Prize, 2013 Mobile E-learning App Idea Contest** Sep 2013  
*Korea Ministry of Education*

## TECHNICAL SKILLS

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- **Languages:** C, C++14, Python, Go, Markdown,  $\text{\LaTeX}$
- **Frameworks:** CUDA, Intel SGX, Kubernetes, RDMA, Android, Ceph, Linux, QEMU, KVM

## REFERENCES

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- **Jaehyuk Huh:** Professor, School of Computing, KAIST. jhhuh@kaist.ac.kr
- **Youngjin Kwon:** Assistant Professor, School of Computing, KAIST. yjkwon@kaist.ac.kr
- **Mosharaf Chowdhury:** Morris Wellman Assistant Professor, Electrical Engineering and Computer Science Department, The University of Michigan. mosharaf@umich.edu