Seungbin Song

Curriculum Vitae

Contact Information

Electrical and Electronic Engineering
Yonsei University
Yonsei-Ro 50
Seoul, South Korea, 03722

[first_name]@yonsei.ac.kr
http://corelab.or.kr/~seungbin

Education

Yonsei University, Seoul, South Korea
Ph.D. in Electrical and Electronic Engineering, 2024
Advisor: Prof. Hanjun Kim

Pohang University of Science and Technology (POSTECH), Pohang, South Korea
Master of Science in Creative IT Engineering, 2018
Advisor: Prof. Hanjun Kim

Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea
Bachelor of Science in Creative IT Engineering, Computer Science and Engineering, 2017

Experience

Research Assistant, From 2017 to Present
Compiler Research Laboratory (Corelab), *POSTECH / Yonsei University*, South Korea

- Develop compiler optimizations for data plane programs in SDN (the first author of CGO'21 paper)
- Design scheduling algorithms for real-time decision making in IoT systems (a co-author of RTSS'17, RTAS'20 papers)
- Develop compilers to optimize memory usage of deep learning application (the first author of ICPP'24 paper, a co-author of DAC'23 paper)

Recognition

- Magna Cum Laude from POSTECH, February 2017

Activities

Poster Presentations

- Graduate Sutdent Research Competition, The 18th ACM/IEEE International Symposium on Code Generation and Optimization (CGO), Feburary 2020

International Conference Organizing Assistant

- Student Volunteer, The 3rd C4ML workshop at The 19th ACM/IEEE International Symposium on Code Generation and Optimization (CGO), Feburary 2021

Domestic Conference Organizing Assistant

- Local Arrangements Assistant, KIISE Computer System Society Winter Workshop, January 2019

International Conference Sub-reviewer

- Sub-reviewer, ACM/IEEE International Symposium on Code Generation and Optimization (CGO), 2021-2023
- Sub-reviewer, IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2021-2023
- Sub-reviewer, ACM SIGBED International Conference on Embedded Software (EMSOFT), 2022-2023
- Sub-reviewer, International Symposium on Computer Architecture (ISCA), 2023
- Sub-reviewer, ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2020, 2023
- Sub-reviewer, ACM SIGPLAN 2022 International Conference on Compiler Construction (CC), 2022
- Sub-reviewer, International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2020
- Sub-reviewer, IEEE International Conference on Computer Design (ICCD), 2020
- Sub-reviewer, IEEE International Symposium on Workload Characterization (IISWC), 2018

Teaching

- EEE3313: Introductory Digital Labs, Teaching Assistant, Spring 2019, Yonsei University
- EEE3545: Application Programming, Teaching Assistant, Fall 2018, Yonsei University
- CITE301: Creative IT Design III, Teaching Assistant, Fall 2017, POSTECH
- CITE101: Personal Growth Statement, Teaching Assistant, Spring 2017, POSTECH

Publications

Refereed Journal Publications

[1] Gyeongmin Lee, Bongjun Kim, Seungbin Song, Seonyeong Heo, and Hanjun Kim, "ComFlex: Composable and Flexible Resource Management for the IoT," in *IEEE Internet of Things Journal*, November 2021.
IF=9.936, Q1 (JCR 2019)

Refereed Conference Publications

[2] Seungbin Song, Ju Min Lee, Haeeun Jeong, Hyunho Kwon, Shinnung Jeong, Jaeho Lee, and Hanjun Kim, "TeMCO: Tensor Memory Compiler Optimization across Tensor Decompositions in Deep Learning Inference," to appear in *Proceedings of the 53rd International Conference on Parallel Processing (ICPP)*, August 2024.

[3] Jaeho Lee, Shinnung Jeong, Seungbin Song, Kunwoo Kim, Heelim Choi, Youngsok Kim, and Hanjun Kim, "Occamy: Memory-efficient GPU Compiler for DNN Inference," in *Proceedings of the 60th Annual Design Automation Conference 2023 (DAC)*, July 2023.

[4] Shinnung Jeong, Yongwoo Lee, Jaeho Lee, Heelim Choi, Seungbin Song, Jinho Lee, Youngsok Kim, and Hanjun Kim, "Decoupling Schedule, Topology Layout, and Algorithm to Easily Enlarge the Tuning Space of GPU Graph Processing," in *Proceedings of the 31st International Conference on Parallel Architectures and Compilation Techniques (PACT)*, October 2022.

[5] Gyeongmin Lee, Bongjun Kim, Seungbin Song, Changsu Kim, Jong Kim, and Hanjun Kim, "Precise Correlation Extraction for IoT Fault Detection with Concurrent Activities," in *Proceedings of the International Conference on Embedded Software (EMSOFT)*, October 2021.

[6] Seungbin Song, Heelim Choi, and Hanjun Kim, "Fine-Grained Pipeline Parallelization for Network Function Programs," in *Proceedings of the 2021 International Symposium on Code Generation and Optimization (CGO)*, March 2021.

[7] Seonyeong Heo, Seungbin Song, Bongjun Kim, and Hanjun Kim, "Sharing-aware Data Acquisition Scheduling for Multiple Rules in the IoT," in *Proceedings of the IEEE Real-Time And Embedded Technology And Applications Symposium (RTAS)*, April 2020.

[8] Bongjun Kim, Seonyeong Heo, Gyeongmin Lee, Seungbin Song, Jong Kim, and Hanjun Kim, "Spinal Code: Automatic Code Extraction for Near-User Computation in Fogs," in *Proceedings of the 28th International Conference on Compiler Construction (CC)*, February 2019.

[9] Seonyeong Heo, Seungbin Song, Jong Kim, and Hanjun Kim, "RT-IFTTT: Real-Time IoT Framework with Trigger Condition-aware Flexible Polling Intervals ," in *2017 IEEE Real-Time Systems Symposium (RTSS)*, December 2017.

Patents

[10] Hanjun Kim, Seungbin Song, Bongjun Kim, and Seonyeong Heo, "Scheduling Apparatus and Method based on Data Sharing between Multiple Rules in IoT Environment," KR Patent Number 10-2382328-0000, March 2022.

[11] Hanjun Kim and Seungbin Song, "Apparatus and Method for Parallelizing and Compiling Packet Processing Program," KR Patent Number 10-2236700-0000, March 2021.

[12] Hanjun Kim and Seungbin Song, "Method for Static Analysis based on Data Dependence on Data Plane Towards Network Switch Parallelization, and Parallelization Apparatus using the same," KR Patent Number 10-2207775-0000, January 2021.