

Daejeon, Korea
programelot@gmail.com
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Hyunmo Sung

<https://programelot.github.io>
GitHub: programelot
LinkedIn: HyunmoSung

SKILLS

Programming C, C++, C#, CUDA, Python, PAPI, CMake, LLVM
Communication Korean (native), English
Other Unity, Visual studio code, Github, Linux(Ubuntu)

WORK EXPERIENCE

Researcher February 2020 - February 2023
ELC(Embedded Systems Languages and Compilers Lab) Yonsei University, Seoul, Korea

- Researched about the profile-guided-optimization.
- Implemented and evaluated the performance of the bloom filter using CUDA unified memory.
- Evaluated the performance of lazy parallel kronecker algebra on the modern GPU T4.
- Joint Research Project with DS Division of Samsung Inc. through Yonsei-Samsung Semiconductor Research Center (YSSRC) Program.

PROJECT

Revist the Supernodal Floyd Warshall algorithm November 2023 - December 2023
Side project

- Implemented the Supernodal Floyd-Warshall algorithm from the paper <https://dl.acm.org/doi/10.1145/3332466.3374533>.
- 78 times faster than a Floyd-Warshall algorithm with a single thread.
- 17 times faster than a Floyd-Warshall algorithm with multiple threads with other optimization techniques.
- Utilized entire threads with OpenMP.
- Source is open on the github repository <https://github.com/programelot/Supernodal-Floyd-Warshall>.

Matrix multiplication on GPU July 2022 - September 2022
Side project

- Developed 11 matrix multiplication algorithms on CPU and GPU.
- Estimated and compared performance of each algorithms.
- Utilized the shared memory on GPU.
- Implemented Strassen's algorithm and Winograd's algorithm.
- Source is open on the github repository <https://github.com/programelot/MatrixMultiplication>.

BackRomii July 2022
Indie Game Development

- Developed an escape game from auto generated maze with first person view.
- - Used recursive division method to generate maze.
- Optimized the game by developing an off culling algorithm.
- Developed a path finding algorithm.
- Developed in two weeks like game jam.
- Game has been released on the web. <https://aintmos.itch.io/backromii>
- 1162 views and 292 downloads happened.

EDUCATION

Computer science

March 2020 - February 2023

Yonsei university, Seoul, Korea
Master, Graduated

Main courses: Multicore computing topics, Introduction to approximation algorithms

Computer science

March 2016 - February 2020

Yonsei university, Seoul, Korea
Bachelor, Graduated

Main courses: Algorithm analysis, Computer graphics, Compiler design, Multicore programming fundamentals

Multimedia engineering

March 2014 - February 2016

Dongguk university, Seoul, Korea
Bachelor, Drop out for transfer to other university

Main courses: Multimedia Data Structures, Internet Programming, Multimedia Programming

PUBLICATION

Profile-guided Orchestration of Computations for CPU and PIM Cores

2023

Hyunmo Sung
Yonsei university, thesis.

Performance Evaluation of GPU-based Bloom Filters Using CUDA Unified Memory

2022

Hyunmo Sung, and Bernd Burgstaller
Korea Software Congress 2022 (한국정보과학회 학술발표논문집 2022): 45-47.

Lazy Evaluation of Kronecker Algebra Operations on the Tesla T4 GPU

2020

Ham, Seokhwan, Hyunmo Sung, Shinhyung Yang, and Bernd Burgstaller
Korea Computer Congress 2020 (한국정보과학회 학술발표논문집 2020): 44-46.

PATENT

Offloading methodology for utilizing Processing-In-Memory and the machine for it (프로세스 인 메모리의 활용을 위한 오프로드 처리 방법 및 그를 위한 장치)

Bernd Burgstaller, Hyunmo Sung, Seongho Jeong, Shinhyung Yang, Jayhwan Lee, and Jiun Jung.
Application No. 10-2022-0162906, Nov 29 2022.

AWARDS

- **Capstone project 1st place (졸업 작품 최우수상)** December 06, 2019
Lazy Parallel Kronecker Algebra, Yonsei University, Seoul, Korea
- **Capstone project 1st place (졸업 작품 최우수상)** May 13, 2019
Projection-Based AR Evacuation Simulator using Kinect for Windows V2, Yonsei University, Seoul, Korea
- **Honored Student Prize (학기 우수생)** July 09, 2015
Dongguk University, Seoul, Korea
- **Honored Student Prize (학기 우수생)** January 09, 2015
Dongguk University, Seoul, Korea
- **Honored Student Prize (학기 우수생)** July 07, 2014
Dongguk University, Seoul, Korea