Kiwan Maeng

Contact Information

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Research Interests

My research interests lie in building efficient and reliable systems for energy-harvesting devices. Energy-harvesting devices have no continuous power source (e.g., battery), instead operating on a scarce and unpredictable energy gathered by its harvester (e.g., solar panel). I seek to broaden the possibilities of such devices using co-design of hardwares, compilers, and runtime systems.

Research Area: Energy-Harvesting Devices, Embedded Systems, IoT, Hardware-Software Co-Design, Compiler

Education

Carnegie Mellon University, Pittsburgh, PA — Aug 2016 –
Ph.D. in Electrical and Computer Engineering
- Advisor: Prof. Brandon Lucia

Seoul National University, Seoul, Korea — Aug 2016
B.S. in Electrical and Computer Engineering
Graduated with Summa Cum Laude (GPA: 4.14/4.30)

Referred Papers

[1] Adaptive Dynamic Checkpointing for Safe Efficient Intermittent Computing
Kiwan Maeng and Brandon Lucia
OSDI 2018 - USENIX Symposium on Operating Systems Design and Implementation

[2] Alpaca: Intermittent Execution without Checkpoints
Kiwan Maeng, Alexei Colin and Brandon Lucia
OOPSLA 2017 - Object-Oriented Programming, Systems, Languages & Applications

Other Papers

[4] Getting Started with Intermittent Computing
Brandon Lucia, Emily Ruppel, Kiwan Maeng, Graham Gobieski and Milijana Surbatovich
MICRO 2018 (workshop, TBD)

[5] Intermittent Computing: Challenges and Opportunities
Brandon Lucia, Vignesh Balaji, Alexei Colin, Kiwan Maeng, and Emily Ruppel
SNAPL 2017

[6] The Midnight Engineers (Book, Korean)
Kiwan Maeng
Science comicbook for non-majors (LINK).
Won several awards including *10 Authors of the Year 2017*.

Awards & Honors

Korea Foundation for Advanced Studies Scholarship, KFAS — 2016 – 2021
Summa Cum Laude, Seoul National University — Aug 2016
National Scholarship for Science & Engineering, KOSAF — 2010 – 2016

Work Experience

Carnegie Mellon University, Pittsburgh, PA — Sep 2016 –
Research Assistant with Prof. Brandon Lucia

- Tasks: Developing hardware and software systems for energy-harvesting devices. Recent work include building a compiler and a runtime system for strong termination assurance [1], or designing and implementing a new programming language for efficiency [2].
- Skills: C, C++, LLVM (backend), Clang (frontend), Python, TI MSP430, GNU make

Seoul National University, Seoul, Korea — March 2015 – Aug 2016
Research Intern with Prof. Hyuk-Jae Lee

- Tasks: Developed hardware for computer vision.
- Skills: Verilog, C, FPGA

Rsupport Inc., Seoul, Korea — Feb 2013 – Dec 2015
QA Engineer

- Tasks: Developed internal test automation framework.
- Skills: Java, Selenium

Graduate Coursework

18-748 Wireless Sensor Networks	Spring 2018
18-643 Reconfigurable Logic: Technology, Architecture and Applications	Fall 2017
18-797 Machine Learning for Signal Processing	Fall 2017
15-745 Optimizing Compilers for Modern Architectures	Spring 2017
18-742 Advanced Computer Architecture and Systems	Spring 2017
14-642 Introduction to Embedded Systems	Fall 2016
18-743 Energy Aware Computing	Fall 2016

Technical Skills

- C (Advanced) / C++, Python (Experienced) / Verilog, Java, Swift (Intermediate)
- Developing compilers using Clang (frontend) and LLVM (backend).
- Designing embedded systems, mainly using TI MSP430 microprocessor.

References

Available on request