

Kiwan Maeng

CONTACT INFORMATION	CIC 4th floor Carnegie Mellon University 4720 Forbes Avenue Pittsburgh, PA 15213	Homepage: https://kiwanmaeng.com Email: kmaeng@andrew.cmu.edu
RESEARCH INTERESTS	My research interests lie in <i>co-designing different system layers for low-power embedded devices</i> , currently focusing on batteryless energy-harvesting devices. I designed compilers, programming models, hardware, and software for batteryless devices with frequent failures [2,3,5–8]. Experiences with failure-frequent batteryless devices also led me in designing an efficient fault-tolerant system for distributed recommendation model training [1]. <i>Research Area:</i> Embedded Systems, Compilers, Low-power Devices, Energy-harvesting Devices, Systems for Machine Learning (SysML)	
EDUCATION	Carnegie Mellon University , Pittsburgh, PA Ph.D. in Electrical and Computer Engineering - Advisor: Prof. Brandon Lucia	Aug 2016 – May 2021 (Expected)
	Seoul National University , Seoul, Korea B.S. in Electrical and Computer Engineering <i>Graduated with Summa Cum Laude</i> (GPA: 4.14/4.30)	Aug 2016
AWARDS & HONORS	Korea Foundation for Advanced Studies Scholarship , KFAS Summa Cum Laude , Seoul National University National Scholarship for Science & Engineering , KOSAF	2016 – 2021 Aug 2016 2010 – 2016
REFERRED PAPERS	<ul style="list-style-type: none">[1] CPR: Understanding and Improving Failure Tolerant Training for Deep Learning Recommendation with Partial Recovery Kiwan Maeng, Shivam Bharuka, Isabel Gao, Mark C. Jeffrey, Vikram Saraph, Bor-Yiing Su, Caroline Trippel, Jiyan Yang, Mike Rabbat, Brandon Lucia, and Carole-Jean Wu MLSys 2021 - Conference on Machine Learning and Systems[2] Adaptive Low-overhead Scheduling for Periodic and Reactive Intermittent Execution Kiwan Maeng and Brandon Lucia PLDI 2020 - Programming Language Design and Implementation[3] Dynamic Task-based Intermittent Execution for Energy-harvesting Devices Amjad Yousef Majid, Carlo Delle Donne, Kiwan Maeng, Alexei Colin, Kasim Sinan Yildirim, Brandon Lucia, and Przemysław Pawełczak TOSN 2020 - ACM Transactions on Sensor Networks[4] Enhancing Stratospheric Weather Analysis and Forecasts by Deploying Sensors from a Weather Balloon Kiwan Maeng, Iskender Kushan, Brandon Lucia, and Ashish Kapoor NeurIPS 2019 Workshop: Tackling Climate Change with Machine Learning (spotlight talk) - Conference on Neural Information Processing Systems[5] Supporting Peripherals in Intermittent Systems with Just-In-Time Checkpoints Kiwan Maeng and Brandon Lucia PLDI 2019 - Programming Language Design and Implementation[6] Adaptive Dynamic Checkpointing for Safe Efficient Intermittent Computing Kiwan Maeng and Brandon Lucia OSDI 2018 - USENIX Symposium on Operating Systems Design and Implementation	

	<p>[7] Alpaca: Intermittent Execution without Checkpoints <u>Kiwan Maeng</u>, Alexei Colin and Brandon Lucia OOPSLA 2017 - Object-Oriented Programming, Systems, Languages & Applications</p> <p>[8] Intermittent Computing: Challenges and Opportunities Brandon Lucia, Vignesh Balaji, Alexei Colin, <u>Kiwan Maeng</u>, and Emily Ruppel SNAPL 2017</p>
OTHER PUBLICATIONS	<p>[9] The Midnight Engineers (Book, Korean) <u>Kiwan Maeng</u> Science comicbook for non-majors (LINK). Won several awards including <i>10 Authors of the Year 2017</i>.</p>
TEACHING EXPERIENCE	<p>Teaching Assistant, Carnegie Mellon University Spring 2020 For 15-745, <i>Optimizing Compilers</i> with Prof. Todd C. Mowry • Tasks: Designed homeworks and delivered lectures on the LLVM framework for graduate level compiler class.</p> <p>Hackathon Mentor, Carnegie Mellon University October 2019 As part of <i>OurCS</i>, CMU’s educational outreach program for undergraduate women in CS • Tasks: Designed and mentored a hackathon project for building batteryless board game.</p> <p>Tutorial Organizer, MICRO October 2018 Organizer for a tutorial, <i>Getting Started with Intermittent Computing</i> • Tasks: Designed and ran a full-day tutorial where 60+ participants learned the basics of intermittent computing with hands-on experiences.</p>
WORK EXPERIENCE	<p>Facebook AI Research SysML Team, Boston, MA May – Aug 2020 Research Scientist Intern with Prof. Carole-Jean Wu • Tasks: Improving efficiency in large-scale distributed recommendation model training in the presence of frequent machine failures [1].</p> <p>Microsoft Research, Seattle, WA May – Aug 2019 Research Scientist Intern with Ashish Kapoor • Tasks: Developing a hardware system and a machine learning algorithm for improving the precision of the weather forecast [4].</p> <p>Carnegie Mellon University, Pittsburgh, PA Sep 2016 – Research Assistant with Prof. Brandon Lucia • Tasks: Developing systems for batteryless energy-harvesting devices [2,3,5–8].</p>
REFERENCES	Available on request