

Yiming Gan

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RESEARCH INTERESTS

My research interests lie in the field of autonomous machines. I work on building intelligent and reliable robots, drones and autonomous vehicles. I also work on connecting individual intelligent units. My research works focus on both algorithmic and architecture.

EDUCATION

University of Rochester 2018.9 - 2023.7
Ph.D. student, Computer Science.
Dissertation: Improving Fault Tolerance of Computing Systems for Autonomous Machines.
Advisor: Yuhao Zhu
University of California, Santa Barbara 2016.9 - 2018.5
M.S., Computer Engineering.
Advisor: Yuan Xie
Beijing Institute of Technology 2012.9 - 2016.7
B.S., Information Engineering.
Advisor: Fei Gao

ACADEMIC HONOR

- 2023, New One Hundred Stars, Chinese Academy of Sciences.

WORKING EXPERIENCE

Assistant Professor @ ICT,CAS 07/2023 - now

Research Intern, Machine Learning Research Group @ ARM 06/2019 - 09/2019

- Implemented Network Architecture Search (NAS) for Keyword Spotting (KWS) applications.
- Implemented Network Architecture Search (NAS) for Speech Enhancement (SE) applications.
- Applied system level optimizations on KWS and SE to enable both applications running on ARM Micro-controllers (MCUs).

Research Intern, Reality Lab @ Facebook 09/2020 - 02/2021

- Participated developing dynamic sparse deep learning algorithms.
- Implemented software implementations for dynamic sparse deep learning algorithms.
- Implemented hardware simulator for dedicated hardware executing dynamic sparse deep learning algorithms.

PUBLICATION Conference Articles

- **Yiming Gan**, Yuxian Qiu, Lele Chen, Jingwen Leng, Yuhao Zhu
Low-Latency Proactive Continuous Vision.
Best Paper Nomination.
In 29th International Conference on Parallel Architectures and Compilation Techniques (PACT'20).

- Igor Fedorov, Marko Stamenovic, Carl Jensen, Li-Chia Yang, Ari Mandell, **Yiming Gan**, Matthew Mattina, Paul N. Whatmough.
TinyLSTMs: Efficient Neural Speech Enhancement for Hearing Aids.
In INTERSPEECH 2020.
- **Yiming Gan**, Yuxian Qiu, Jingwen Leng, Minyi Guo, Yuhao Zhu
Architecture Support for Robust Deep Learning.
In 53rd IEEE/ACM International Symposium on Microarchitecture (MICRO'2020).
- **Yiming Gan**, Yu Bo, Boyuan Tian, Leimeng Xu, Wei Hu, Shaoshan Liu, Qiang Liu, Yanjun Zhang, Jie Tang and Yuhao Zhu.
Eudoxus: Characterizing and Accelerating Localization in Autonomous Machines.
In 27th IEEE International Symposium on High-Performance Computer Architecture (HPCA-27).
- Weizhuang Liu, Bo Yu, **Yiming Gan**, Qiang Liu, Jie Tang, Shaoshan Liu, Yuhao Zhu.
Archytas: A Framework for Synthesizing and Dynamically Optimizing Accelerators for Robotic Navigation.
In 54th IEEE/ACM International Symposium on Microarchitecture (MICRO'2021).
- Yu Feng, Gunnar Hammonds, **Yiming Gan**, Yuhao Zhu.
Crescent: Taming Memory Irregularities for Accelerating Deep Point Cloud Analytics.
49th IEEE/ACM International Symposium on Computer Architecture (ISCA '22)
- **Yiming Gan**, Paul Whatmough, Jingwen Leng, Bo Yu, Shaoshan Liu, Yuhao Zhu.
BRAUM: Analyzing and Protecting Autonomous Machine Software Stack
33rd IEEE International Symposium on Software Reliability Engineering (ISSRE-22)
- Abhishek Tyagi, **Yiming Gan**, Shaoshan Liu, Bo Yu, Yuhao Zhu.
Thales: Formulating and Estimating Architectural Vulnerability Factor for DNN Accelerators
29th IEEE International Symposium on High-Performance Computer Architecture (HPCA-29)
- Yuhui Hao*, **Yiming Gan***, Bo Yu, Qiang Liu, Shaoshan Liu, Yuhao Zhu.
BLITZCRANK: Factor Graph Accelerator for Motion Planning
60th Design Automation Conference (DAC)
- Zishen Wan*, **Yiming Gan***, Bo Yu, Arijit Raychowdhury, Yuhao Zhu.
VPP: The Vulnerability-Proportional Protection Paradigm Towards Reliable Autonomous Machines
5th Domain Specific System Architecture (DOSSA-5) Workshop at ISCA 2023.

Journal Articles

- Yiming Gan, Yuxian Qiu, Jingwen Leng, Yuhao Zhu
SVSoC: Speculative Vision Systems-on-a-Chip
Volume 18, Issue 1, Jan-June 2019, Computer Architecture Letters (CAL)
- Qiang liu, Yuhui Hao, Weizhuang Liu, Bo Yu, **Yiming Gan**, Jie Tang, Shaoshan Liu, Yuhao Zhu.
An Energy Efficient and Runtime Reconfigurable Accelerator for Robotic Localization
IEEE Transactions on Computers (TC)

SERVICES

Tutorial and Workshop Organizations

- Co-organizer: Infrastructure and Methodology for SoC Performance and Power Modeling Tutorial co-located with IISWC 2018, ASPLOS 2019, ISCA 2019. Tutorial website: <https://www.cs.rochester.edu/horizon/socinfra-tutorial/>
- Publicity Chair of FastPath 2021. Tutorial website: <https://fastpath2020.github.io/FastPath2021/>
- Web Chair of RSS2: Workshop on Robustness and Safe Software 2.0. Tutorial website co-located with ASPLOS-21, ASPLOS-22: <https://rss2workshop.github.io/>
- Reviewer of CAL, AAAI, IISWC, ECCV.

TEACHING

Teaching Assistant

- @UofR: Introduction to Computer Science (Undergraduate)
- @UofR: Computer Organization (Graduate)
- @UofR: Introduction to Databases (Graduate)

Last updated: September 13, 2023