Guihong Li

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Education

- **The University of Texas at Austin** — Austin, Texas
  Ph.D. of Electrical and Computer Engineering; GPA: 4.0/4.0 — *August 2019 - Now*
  Advisor: *Radu Marculescu*
- **Tsinghua University** — Beijing, China
  Graduate student of Nano Integrated Circuits and Systems — *August 2018 - July 2019*
- **Beijing University of Posts and Telecommunications** — Beijing, China
  Bachelor's degree in Communication Engineering; GPA: 92.59/100; Rank: 6/565 — *September 2014 - June 2018*

RESEARCH EXPERIENCE

My research emphasizes the enhancement of hardware efficiency in contemporary deep neural networks by employing a fusion of techniques for a variety of applications. Key areas of focus include:

- Streamlining the time efficiency of AutoML through the investigation of multiple explainability aspects, particularly in the development of theoretically-grounded, training-free NAS approaches.
- Facilitating automatic dynamic neural network design, taking into account hardware resource availability.
- Enabling real-time inference and training on budget-friendly edge devices through network-system co-design.
- Optimizing human activity-related applications, with a special emphasis on mobile device compatibility.

Industry Experience

- **ARM ML Tech** — San Jose
  Research Intern (Full-time) — *May 2021 - August 2021*
  Supervisor: Dr. Kartikeya Bhardwaj, Dr. Naveen Suda, Dr. Lingchuan Meng
  - **Hardware Performance evaluation**: Build a model to estimate neural networks' latency on neural accelerators.
  - **Hardware-aware NAS**: Explore the neural architecture search technique to search for hardware-efficient models.

Selected Publications

- Guihong Li, Kartikeya Bhardwaj, Yuedong Yang, and Radu Marculescu. "TIPS: Topologically Important Path Sampling for Anytime Inference Networks." ICML 2023.
- Guihong Li, Yuedong Yang, Kartikeya Bhardwaj, and Radu Marculescu. "ZiCo: Zero-shot NAS via inverse Coefficient of Variation on Gradients." ICLR 2023 (**Spotlight**).
- Guihong Li, Sumit K. Mandal, Umit Y. Ogras, and Radu Marculescu. "FLASH: Fast Neural Architecture Search with Hardware Optimization." CODES+ISSS 2021.
- Guihong Li*, Kartikeya Bhardwaj*, and Radu Marculescu. "How does topology influence gradient propagation and model performance of deep networks with DenseNet-type skip connections?" CVPR 2021. (*Co first author)
- Dawei Liang*, Guihong Li*, Rebecca Adaimi, Radu Marculescu and Edison Thomaz. "AudioIMU: Enhancing Inertial Sensing-Based Activity Recognition with Acoustic Models." ISWC 2022. (*Co first author) **Best paper nomination**
- Yuedong Yang, Guihong Li, and Radu Marculescu. "Efficient On-device Training via Gradient Filtering ." CVPR 2023.
- A. Alper Goksoy, Guihong Li, Sumit K. Mandal, Umit Y. Ogras, Radu Marculescu. "CANNON: Communication-Aware Sparse Neural Network Optimization." Submitted to IEEE TETC
- Allen-Jasmin Farcas, Guihong Li, Kartikeya Bhardwaj, and Radu Marculescu. "A Hardware Prototype Targeting Distributed Deep Learning for On-device Inference." CVPR Workshops 2020.

Honors and Awards

- Premier Scholarship Candidate (Highest college honor. I am the only junior student; the rest are all seniors) - 2016
- National Scholarship (Top 1%) - 2016, 2017
- National Encouragement Scholarship (Top 2%) - 2015
- Ranked 1st in the nationwide final of China Next-Generation Network Technology Innovation Contest - 2015
- First prize (Top 10%) among almost 10,000 teams at The international Mathematics Competition in modeling

Skills Summary

- **Language** Python, C/C++, Matlab
- **Frameworks** TensorFlow, PyTorch, Scikit-learn, Scipy, TVM, ONNX, Keil Studio