DAN WU

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EDUCATION

• **National University of Singapore, Singapore** *Sept. 2020 - Present*
Ph.D. in Computer Science. Advisor: Tulika Mitra

• **Fudan University, China** *Jan. 2015 - Jun. 2020*
B.Sc. in Computer Science.

RESEARCH INTERSETS

I have been working on reconfigurable architecture and compilation, Graph Neural Networks acceleration, and classic graph algorithm acceleration. I am also interested in other non-graph-based machine learning acceleration.

PUBLICATIONS

[1] **InkStream: Real-time GNN Inference on Streaming Graphs via Incremental Update** **In submission**
Dan Wu, Zhaoying Li, and Tulika Mitra.

- Designed an event-based method reducing irregular memory access and repeated computation of Graph Neural Network (GNN) inference on dynamic graphs by incrementally updating node embedding.

[2] **Flip: Data-Centric Edge CGRA Accelerator** **In submission**
Dan Wu, Peng Chen, Thilini Kaushalya Bandara, Zhaoying Li, and Tulika Mitra.

- Proposed a full-stack solution (compiler, simulator, and RTL implementation) for accelerating the irregular graph analysis algorithms on Coarse-Grained Reconfigurable Array (CGRA) original designed for regular loop kernels.

[3] **FLEX: Introducing FLEXible Execution on CGRA with Spatio-Temporal Vector Dataflow** **ICCAD'23**
Thilini Kaushalya Bandara, Dan Wu, Rohan Juneja, Dhananjaya Wijerathne, Tulika Mitra, and Li-Shiuan Peh.

- Designed a CGRA with a novel, flexible spatio-temporal vector dataflow execution model, reaching a balance between energy-efficient low-throughput spatial CGRAs and energy-consuming high-throughput spatial-temporal CGRAs by adjusting the reconfiguration frequency.

[4] **LISA: Graph Neural Network based Portable Mapping on Spatial Accelerators** **HPCA'22**
Zhaoying Li, Dan Wu, Dhananjaya Wijerathne, and Tulika Mitra. *Distinguished Artifact Award*

- Proposed a portable compilation framework that can be tuned automatically to generate quality mapping for varied spatial accelerators.

[5] **Mining verb-oriented commonsense knowledge** **ICDE'20**
Jingping Liu, Yuanfu Zhou, Dan Wu, Chao Wang, Haiyun Jiang, Sheng Zhang, Bo Xu, and Yanghua Xiao.

- Proposed a knowledge-driven approach to mine verb-oriented commonsense knowledge from verb phrases with the help of taxonomy.

WORK EXPERIENCE

• **The Hong Kong Polytechnic University** *Jul. 2019 - Dec. 2019*
Research Assistant. Advisor: Jiannong Cao
- Designed an estimation model to adaptively partition neural network models by layer and deploy different parts on different edge devices for model inference acceleration.

PRACTICAL EXPERIENCE

• **Integration of TVM and NVDLA** *Sep. 2020 - Nov. 2020*
- Improved the performance and compatibility of the latest industrial accelerator NVDLA by allowing NVDLA compiler use highly optimized and frontend-friendly TVM model as input. Has 24 stars on GitHub.