Sankeerth Durvasula

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Research Interests

Architecture, Deep Learning, Visual Computing/Graphics, Systems for Deep Learning Acceleration.

Education

2020 – · · · ·	**Ph.D. Computer Science** **University of Toronto** Supervisor: Prof. N. Vijaykumar	GPA: *4.0/4.0*
2017 – 2018	**Masters in Tech., Electrical Engineering** **Indian Institute of Technology Madras** Supervisor: Prof. V. Kamakoti	cGPA: *9.16/10*
2013 – 2017	**Bachelors in Tech., Electrical Engineering** **Indian Institute of Technology Madras**	cGPA: *9.16/10*

Skills

Programming Languages/Frameworks: Writing performant code in C++, CUDA, python, PyTorch, JAX

Research

Conference Proceedings / Journal Articles

1. S. Durvasula, Y. Guan, and N. Vijaykumar, "Ev-conv: Fast cnn inference on event camera inputs for high-speed robot perception," *IEEE Robotics and Automation Letters (RA-L). Presented at IROS*, 2023.

2. S. Durvasula, R. Kiguru, S. Mathur, J. Xu, J. Lin, and N. Vijaykumar, "Voxelcache: Accelerating online mapping in robotics and 3d reconstruction tasks," in *Proceedings of the International Conference on Parallel Architectures and Compilation Techniques (PACT)*, 2022.

Posters

1. S. Durvasula, Y. Guan, and N. Vijaykumar, "Ev-conv: Fast cnn inference on event camera inputs for high-speed robot perception," *IEEE International Conference on Robotics and Systems (IROS)*, 2023.

2. S. Durvasula and N. Vijaykumar, "Efficient automatic differentiation for gpu based differentiable simulators," *Student Research Competition at ACM MICRO*, 2023.

3. S. Durvasula and N. Vijaykumar, "Accelerating simulation engines for deep reinforcement learning with concurrent kernel execution," *Student Research Competition at IEEE/ACM Programmable Architectures and Compilation Techniques (PACT)*, 2022.

Under Review

1. S. Durvasula, S. Kumar, R. Liang, *et al.*, "Hiwe: Scene importance weighted encoding for accelerated training of radiance fields," in *International Conference on Learning Representations (ICLR)*, 2024.

2. S. Durvasula, J. Zhao, F. Chen, P. Kumar, Y. Guan, and N. Vijaykumar, "Scar: Sub-core and atomic unit collaborative reduction computation for fast raster-based differentiable rendering," in *International Symposium on Computer Architecture (ISCA)*, 2024.

3 S. Durvasula, J. Zhao, R. Kiguru, Y. Guan, and N. Vijaykumar, "Ace: Efficient gpu kernel concurrency for input-dependent irregular computational graphs," in *International Symposium on Computer Architecture (ISCA)*, 2024.

4 C. Li, R. Liang, H. Fan, Z. Zhengen, S. Durvasula, and N. Vijaykumar, "Disorf: A distributed online nerf training and rendering framework for mobile robots international conference on robotics," in *International Conference on Robotics and Automation (ICRA)*, 2024.

Talks

Presented *EvConv*: *Fast cnn inference on event camera inputs for high-speed robot perception*, at the International Conference on Robotics and Systems (IROS), 2023.

Presented *Voxelcache*: *Accelerating online mapping in robotics and 3d reconstruction tasks* at the Programmable Architectures and Compilation Techniques (PACT) conference, 2022.

Presented *Efficient automatic differentiation for GPU based differentiable simulators* at the Student Research Competition (SRC) Finalists Round, MICRO 2023.

Presented *HIWE: Hierarchical Importance Weighted Encoding* at Intel, Vision Research Group, 2023.

Work Experience

2021 – · · · · **Research Affiliate**
Vector Institute, Toronto

2018 – 2020 **Senior Analyst**, Global Compliance
Goldman Sachs Pvt. Ltd.

Teaching Assistantship

- CSC258: Computer Organization - University of Toronto
- CSC2231: Topics in Visual and Mobile Computing Systems - University of Toronto

Service

Reviewer for International Conference for Robotics and Applications (ICRA) 2022.

Secondary reviewer for ACM Microarchitecture (ACM MICRO) Conference 2023.

Secondary reviewer for Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2022.

Secondary reviewer for Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2023.

Secondary reviewer for International Symposium for Computer Architecture (ISCA) 2023.

Student organizer for ACM MICRO 2023 conference held in in Toronto, Canada.

Awards

October 2023 2nd place at Student Research Competition at ACM MICRO 2023.

2022 Recipient of the Wolfond Scholarship in Wireless Information Technology.

Awards (continued)

2013   ■   One of the 30 students shortlisted for the Indian National Math Olympiad (INMO-2013).

2012   ■   Selected to be a KVPY (Kishore Vaignyanik Protsahan Yojana) scholar. Ranked 15 out of over 100,000 applicants.