Pratyush V Moorthy

PratyushVM Pratyush VM pratyush.v.m@gmail.com Pratyush V Moorthy

Education

- **Indian Institute of Information Technology (IIITDM), Design & Manufacturing** Kancheepuram
  BTech in Computer Science and Engineering; ***CGPA: 9.17/10*** *July 2018 – July 2022*

Experience

- **NVIDIA** Pune
  Systems Software Engineer *July 2022 - Present*
  - **Profiling Tools Development**: Working as a DevTools Engineer on the CUPTI API in the Cuda Profiling Tools Development Team.

- **KLA-Tencor** Chennai
  HPC Intern *Dec 2021 - Mar 2022*
  - **Co-Optimization of Algorithms**: Using CUDA to parallelize and migrate custom algorithms used in defect detection to GPUs. Co-optimization and profiling with Nsight Compute and Nsight Systems for maximum performance.

- **Indian Institute of Technology (IIT-R), Roorkee** Guide : Prof.Debiprasanna Sahoo
  Research Intern (Thesis) *Nov 2021 - June 2022*
  - **Formalization of GPU Architecture**: Studying the formalization of the design and micro-architecture of GPUs - SIMT Cores, Warp schedulers and ALU pipelines.

- **Indian Institute of Science (IISc), Bengaluru** Guide : Prof.R.Govindarajan
  Research Intern *May 2021 - Oct 2021*
  - **SRFP Fellowship**: Recipient of the Indian Academy of Sciences' Summer Research Fellowship SRFP '21.
  - **Pipelining DNNs**: Explored pipeline parallelism and hybrid model-data parallelism in training deep CNNs on multi-GPU setups, using Tensorflow Lingvo and GPipe.

- **Indian Institute of Technology (IIT-M), Madras** Guide : Prof.Rupesh Nasre
  Research Intern *Mar 2020 - Oct 2020*
  - **Parallel Max-flow**: Implemented different parallel algorithms to compute maximum network flow on GPUs using CUDA.Also experimented with fundamental graph problems like parallel BFS, parallel Bellman-Ford SSSP on GPUs.

- **HPRCSE Lab, IIITDM Kancheepuram** Guide : Dr.Noor Mahammad Sk
  Research Intern *Dec 2019 - Jan 2020*
  - **Parallel Algorithms and Computing Architectures**: Implemented parallel algorithms and explored various tools for code profiling. Also did literature surveys on parallel computing architectures.

Projects

- **POSIX PathTracer :** Built a multi-threaded global illumination rendering PathTracer using just C++ and POSIX PThreads. Can render a scene of 200 spp in less than 25 minutes.
- **CUDA Max-flow Solver :** Built a GPGPU parallel max-flow solver using CUDA, using parallel push-relabel and heuristic global/gap relabeling. The solver is for static flow networks and computation is asynchronous.
- **CUDA SSSP Solver :** Built a parallel CUDA Single Source Shortest Path Solver that uses parallel Bellman-Ford's algorithm. The underlying traversal is parallelised in an edge-centric BFS.

Programming Skills

Programming Languages: C,C++, Python
Frameworks/Libraries: Tensorflow, Lingvo, CUDA, OpenMP, OpenMPI
Tools: NSight Systems, NSight Compute
Other: MySQL, AWS, GPU Architecture

Additional Activities

- Recipient of the Indian Academy of Sciences' Summer Research Fellowship SRFP '21.
- ICPC 2020 Regionalist (Gwalior-Pune) - rank 222
- Core(2020-21), Joint Core/ HPC Track Lead (2019-20) : CS Club, IIITDM - Educating in Information Technology and Hardware (EDiTH) Division.
- Winner, Special Mention at Startup Weekend 2k19. Led the team with an original pitch to win Recognition team award.
- Coordinator (2018-21) of Institute Innovation Council (IIC), established under MHRD's Innovation Cell(MIC)
- Completed the 5 course Deep Learning Specialization of DeepLearning.AI (Coursera).