LOKESH KOSHALE | CS15B049

Indian Institute of Technology Madras

**EDUCATION**

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| **Program** | **Institution** | **%/CGPA** | **Year of completion** |
| Dual Degree CSE  (B Tech + M Tech) | Indian Institute of Technology Madras | 7.83 | 2020 |
| XII (CBSE) | Jawahar Navodaya Vidyalaya, Raipur | 93.80 | 2014 |
|  | **SKILLS** |  |  |

* Languages (Technical): C, C++, CUDA, Java, Python, Scala, HDL, x86 assembly, Bluespec
* Frameworks and APIs: OpenMP, MPI, SPARK, Tensor-flow, OWL
* Databases: SQL, XML databases (XQuery), RDF (Sparql)

**PROFESSIONAL EXPERIENCE**

**Associate Engineer, Algorithm R&D** at KLA, Chennai (July 2020)

* Design and Implement efficient parallel algorithms for multi-node/multi-GPU systems.

**Algorithm and AI Intern** at KLA, Chennai (December 2019 – June 2020)

* Developed parallel algorithms for Auto Segmentation, Feature Selection and Random Forest on GPU.
* Optimized Random Forest training on GPU for smaller datasets, achieved 2x speedup than cuML.
* Implemented Object Oriented Inference with dynamic parallelism for efficient load balancing on GPUs.

**Algorithm Intern** at KLA, Chennai (Summer 2019)

* Implemented parallel Inference and Sampling algorithms on GPU, achieved 2x-8x speedup than OpesnMP.
* Scaled up the GPU programs using SPARK 2.1 framework for multi-node/multi-GPU systems.

**Software Intern** at eClerx, Mumbai (Summer 2018)

* Object detection and localization in Image using CNN, achieved 88% accuracy on the custom dataset.
* Developed an algorithm to verify websites from pdf-based wireframes using OCR.

**Android Developer** at Machadalo (IITB startup), Mumbai (Summer 2017)

* Developed an Image Auditing mobile application to capture images, verify and upload in the server on Android.
* Used OpenCV for image matching and feature matching to catch fraudulent images in database.

**PROJECTS**

* **A\* algorithm for Dynamic Graphs on GPU**  (2019 - 2020)
  + Built a framework for parallel dynamic A\* which handles insertions, deletions, and fully-dynamic operations.
  + Proved crucial properties of the dynamic computation, which allowed to implement synchronization effectively.
  + Achieved 24x-54x speedup than static A\* for SNAP datasets on 100 batch updates.
  + Applied the framework to different applications of A\*: wireless sensor networks, path planning, and game trees.
* **Sparse Tensor Transpose Operation on GPU**. (2018)
  + Parallelized Tensor Transpose operation on GPU, achieved coalesced memory access for both input and output tensor.
  + Performance improvement persists with varying ranks, varying permutations and varying index ranges.
* **ABySS GENOME Assembler** **on GPU**. (2018)
  + Parallel de-novo assembling of reads into genome sequence and optimized contig formation.
  + Modified data-structure to reduce 10x space and achieved 6x-8x speedup as compared to OpenMP.
* **Lock Contention aware Scheduler for NUMA architecture** (2017)
  + Implemented *shuffling,* it migrates threads across sockets so that a thread seeking lock can find it on the same socket.
  + Reduces the time spent on acquiring locks and shared data access in the critical section.

**POSITION OF RESPONSIBLITY**

* Co-Founder and CTO of **edAR labs (CIN U80302TG2019PTC134107)**  (2017-2019)
  + edAR is an AR based learning platform for school students that focuses on experiential learning.
  + Responsible for managing the development of the product and overseeing fundraising.

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