LOKESH KOSHALE | CS15B049

Indian Institute of Technology Madras

**EDUCATION**

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| **Program** | **Institution** | **%/CGPA** | **Year of completion** |
| Dual Degree CSE | Indian Institute of Technology Madras | 7.59 | 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, Object Database, XML databases (XQuery), RDF (Sparql)

**PROFESSIONAL EXPERIENCE**

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

* Parallel implementation of Inference and Sampling algorithms on GPU, achieved 2x-8x speedup than OpenMP.
* Scaling up GPU programs using SPARK 2.1 framework.

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

* Object detection and localization in Image using CNN, achieved 88% accuracy on the custom dataset.
* Designed and 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 Andriod.
* Used OpenCV for image matching and feature matching to catch fraudulent images in database.

**PROJECTS**

* **A\* algorithm for Dynamic Graphs on GPU**  (2019 - ongoing)
  + Developed a parallel algorithm to find the optimal path on graphs subjected to insertion and deletion of edges.
  + 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.
* **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,* which migrates thread across sockets so that a thread seeking the lock can find the lock on the same socket.
  + Reduces the time spent on acquiring locks and shared data access in the critical section.

**PUBLICATIONS**

* Submitted research poster “*Path Planning for Dynamic Graphs using A\* on GPU*” at **ISC-HPC (2020**) Germany.
  + Submitted the poster to the Project track initially and looking at the content, the Chair suggested to switch to the Research track.
* Writing paper for submission at “The Journal of Supercomputing”. ([Poster](https://github.com/lkoshale/DA_STAR/blob/master/poster/poster3.pdf))

**POSITION OF RESPONSIBLITY**

* Founder and CTO of **edAR labs** (IITM startup) (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 investor meetings and fundraising.

[](https://github.com/lkoshale)[](http://www.linkedin.com/in/lkoshale)