Ghanshyam Chandra

PhD Candidate (2020-present)
CDS, IISc Bangalore

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Links

Github: **Ghanshyamchandra74**
LinkedIn: **Ghanshyam Chandra**

Skills

OS
Linux(Debian/CentOS), macOS

LANGUAGES
C/C++, Python, Julia, Java

FRAMEWORK
OpenMP, MPI, CUDA, SPARK

PACKAGES
GATK, PARABRICKS, TensorFlow
TensorForce.

OTHERS
Pandas, MatPlotlib, Scipy, CVXOPT.

Coursework

Design and Analysis of Algorithms
Numerical Optimisation
Numerical Linear Algebra
Finite Element Methods
Probabilistic Systems Analysis
Introduction to Scalable Systems
Numerical Solution to Differential equations
Parallel Programming
Data Analysis and Visualisation

Education

2016-2020
B.TECH. IN M.E.
NIT RAIPUR
CGPA : 8.83/10

2014-2015
HIGHER SECONDARY
CGBSE
Percentage: 94.00%

2012-2013
HIGH SCHOOL
CGBSE
Percentage: 88.83%

Experience

2020-NOW **FEniCS on GPU** **Open Source Project**
FEniCS on GPU takes advantage of CUDA cores to solve the SPARSE matrix using cuPy and SciPy libraries. Solved Poisson Equation on NVIDIA Tesla K80 GPU with 0.36 Million Grid Points in just 65.995923 seconds.
Link : GitHub

Python, CUDA, Numpy, Scipy, cuPy,FEniCS

MAY 2019 - JULY 2019 **Indian Institute of Science, Banglore** **Research Intern**
During my Internship with Prof. Koushik Viswanathan, at Dept. of Mechanical Engineering IISc. I worked on Mathematical modeling of selective laser sintering process (Transient Poisson's Equations in 3D) with moving laser as Heat Source, and used FEniCS. for Finite Element modeling with unstructured mesh on parallel cores (OpenMP),PETSc, was used for Linear Algebra backend with hypre_amg as precoditioner and GMRES krylov solver.
Link : Project Report

Parallel sparse matrix computation, Transient Poisson's in 3D, Python, FEniCS, PETSc

2019-NOW **Open Robo Simulator** **Open Source Project**
6-DoF Forward kinematics based serial robotic-arm manipulator simulator, simulated Stanford arm.
Link : MathWorks

Robotics, Numerical computing , Forward Kinematics

Achievements/Awards

2015 **Inspire Merit award** **Higher Secondary**
Selected for Inspire Scholarship to pursue research in basic science.

Side Project

2021 **mutiNode:multiGPU implementation of Gram method for out-of-core data access in Randomized SVD algorithms.** **Course Project**
Scaled Gram method for SVD computation on 4 V100 GPU across 2 Nodes. Link : Project Report

2021 **Parallel Page-Rank with MPI** **ML**
Scaled Page-Rank algorithm with 32 MPI ranks. Sparse graph is converted to adjacency lists and then converted to stochastic matrix and power iteration is used to compute eigenvalues.
Link: GitHub

2021 **Kernighan–Lin Graph Partitioning** **Symmetric sparse Graph partitioning**
Sequential implementation tested with 2 million graph edges.
Link: GitHub