Ghanshyam Chandra

gsc74.github.io

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Education

Indian Institute of Science — Bangalore, India
PhD in Computational Science and Data Sciences — *Oct 2020 – Present*

National Institute of Technology — Raipur, India
Bachelor of Technology (Hons) in Mechanical Engineering — *July 2016 – July 2020*

Technical Skills

- **Programming Languages:** • C • C++ • Python • Julia • Java
- **Parallel API:** • MPI • OpenMP • CUDA • Apache SPARK • OpenACC
- **ML/RL APIs:** Tensorflow • Pandas • Tensorforce • CVXOPT
- **Bioinformatics Tools:** • GATK • Parabricks

Research

ATCG Lab, Computational and Data Sciences, Indian Institute of Science — Bengaluru, India
Advisor**: Dr. Chirag Jain* ***(PhD Thesis) — *July 2021 - Current*

- **HPC**: Benchmarking human whole genome and RNA sequencing using Nvidia Ampere A100 GPUs (used PARAM-Siddhi AI Supercomputer). [Blog]
- **Algorithm**: Currently working on co-linear chaining algorithm for sequence to graph alignment including gap costs.

LAMFiP, Mechanical Engineering, Indian Institute of Science — Bengaluru, India
***Advisor**: Dr. Koushik Viswanathan* — *May 2019 - July 2020*

- **Mathematical Modeling**: I worked on Transient Poisson's Equations(3D) with moving heat source, and used FEniCS for Finite Element modeling with unstructred mesh on parallel cores (OpenMP),PETSc was used for Linear Algebra backend with hypre_amg as precoditioner and GMRES krylov solver.

CAD Lab, National Institute of Technology — Raipur, India
***Advisor**: Dr. Shubhankar Bhowmick* — *Mar 2018 - May 2019*

- **FEniCS-on-GPU**: FEniCS is computing platform for solving partial differential equations (PDEs) which leverage MPI+OpenMP parallelism but lacks GPU support. So we developed GPU support for Navier-Stokes equation and Poisson's equation. [source-code]

Relevant Courses

• Numerical Optimisation • Numerical Linear Algebra • Introduction to Scalable Systems • Data Analysis and Visualisation • Parallel Programming • Design and Analysis of Algorithms • Probabilistic Systems Analysis

Awards and Fellowships

- **Inspire Scholarship 2015:** Awarded to pursue research in basic science **2015**

TEACHING and SERVICE

- **Teaching Fellow:** GDB and STL tutorials for Introduction to Scalable Systems course **2015**

Conferences and Seminars

- **RECOMB 2021:** Attendee
- **GTC 2021:** Attendee
- **CDAC GPU Hackathon 2021:** Participent

Miscellaneous

- **Languages:** English (fluent) • Hindi (fluent)
- **Hobbies:** Badminton • Volleyball • Cricket • Cycling • Swimming

References

- **Dr. Chirag Jain,** Computational and Data Sciences, Indian Institute of Science, Bengaluru, India
  Contact: chirag@iisc.ac.in
- **Dr. Koushik Viswanathan,** Mechanical Engineering, Indian Institute of Science, Bengaluru, India
  Contact: koushik@iisc.ac.in