Pritesh Kumar Verma

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Education

- **ITM University** — Gwalior, India
  Bachelor of Technology - Computer Science and Engineering; GPA: 8.04 — *July 2016 - June 2020*
  Courses: *Operating Systems, Data Structures, Analysis Of Algorithms, Deep Learning, Linear Algebra, Networking, Databases.*
- **Sri Chaitanya Jr. College** — Vijayawada, India
  Intermediate; Percentage: 84.7 — *2013 - 2015*
  Courses: *Mathematics, Physics, Chemistry, English, Sanskrit.*

Skills Summary

- **Languages**: Python, C/C++, JavaScript, SQL, JAVA.
- **Frameworks and Libraries**: Scikit, Pandas, Numpy, Pytorch, OpenMP, Lapacke, HPC, Django, Flask.
- **Tools**: GIT, MySQL, SQLite.
- **Platforms**: Linux, Web, Windows, Raspberry, AWS.

Experience

- **Research Fellow (Computer Science and Engineering)** — Kharagpur, West Bengal
  Indian Institute of Technology, Kharagpur — *May 2023 - Present*
  - : Advanced 3D computer vision techniques enable precise point cloud registration for temporally separated point cloud data of agricultural plants, revolutionizing plant phenotyping.
- **AI Fellow** — Rome, Italy (Hybrid)
  PI School — *July 2023 - Present*
  - : Selected as one of 9 global Fellows from a pool of over 800 applicants for the prestigious School of Al Fellowship. Collaborating on optimizing digital asset searches using a large language model (LLM). A member of the 13th Pi School fellows cohort, engaging in a hybrid online and in-person program
- **Post Baccalaureate Fellow (Computer Science and Engineering)** — Chennai, Tamilnadu
  Robert Bosch Centre for Data Science and AI, IIT Madras — *Aug 2022 - Feb 2023*
  - : Independent research on interdisciplinary topics: Physics informed deep learning. Conducted in-depth research on the applications of physics informed deep learning in various domains, including fluid dynamics and traffic. Developed and implemented models using Python and Pytorch.
- **Research Fellow (Computer Science and Engineering)** — Jun 2021 - Aug 2022
  Indian Institute of Technology, Dharwad — *Dharwad, Karnataka*
  - : Designed and executed a hierarchical matrix-based algorithm and implemented it in C++ using MPI and OpenMP; achieved a 60% speedup and 35% reduction in memory usage compared to the baseline algorithm.
- **Software Engineer (Full-time)** — Remote
  Raintree system — *Mar 2021 - May 2021*
  - : Created and designed interactive forms for various categories such as hospitals and insurance agencies. These forms were developed for both Raintree's web-client and software. Additionally, I was responsible for debugging and fixing issues for different clients using RSL (Raintree Scripting) and MySQL.
- **Intern** — Remote
  CSIR - Central Drug Research Institute — *May 2019 - June 2019*
  - : Performed Exploratory Data Analysis using Python's libraries and created a database to query data efficiently in SQL.

Projects

- **Point2Registration**: Developing an innovative point cloud skeletonization algorithm for efficient extraction of plant structures in deformable agricultural environments, enabling accurate plant analysis and monitoring in smart farming and remote sensing applications by using both algorithmic and deep techniques(Ongoing)
- **Eiger**: Designed and Implemented parallel algorithms for computing eigenvalues and eigenvectors for large hss matrices. Computation of eigenvalues and vectors of large matrices could take large computation time in $O(n^3)$. Whereas SuperDC takes only $O(r^2n(log^2n))$.
- **Fast algorithms for hierarchically semiseparable matrices**: Designed and Implemented a Parallel algorithm for storing some rank structured matrices to reduce its size by storing the matrix along a full binary tree. For an $O(n^2)$ size matrix this algorithm only takes $O(n \log n)$ storage which is a huge improvement in terms of storage.
- **Bus travel time estimation using physics informed deep learning**: Developed a physics-informed deep learning model to estimate bus travel time for specific routes by integrating mechanistic models and advanced deep learning techniques.

Honors and Awards

- Hack for Sport (Hackerearth)(Finalists) Top 13 among 4000 teams - June 2022.
- Qualified GATE examination twice with more than 90 percentile - 2020 and 2021.
- NCC (National cadet corps) B-Certificate, NCC helped me developing character, comradeship, discipline, a secular outlook, and spirit.