# CENTER OF EXCELLENCE

High Performance Computing provides aggregating computing power in a way that delivers much higher performance than one could get out of a typical desktop computer or workstation in order to solve large problems in science, engineering, or business. It is aimed to expose the parallel computing concepts to post graduate students. Students are exposed to GP-GPU computing through this lab. Students can implement the projects exploring multithread, multicore and general-purpose core architectures of GPU. Students are expected to implement shared memory and distributed memory programming models like OpemMP, MPI. Exposes the SIMD and MIMD parallel computing MODELS.HP P6 3630, QuadCore, i7,2ghz,8GB RAM,500GB HDD, Nvidia 1 GB GT620 Graphic card Windows 8(4 No). HP P6 3630 ,Quad Core,i3,2ghz,8GB RAM,500TB HDD, Nvidia 1 GB GT620 Graphic card Windows 8(7 No) components are available in the lab

Name of the Lab	Improvement Brought In	List the PO(s), which Are strengthened	Comments, if any
Center of excellence	High Performance Computing Lab	PO1, PO2, PO3, PO4, PO5, PO6	In order to solve large problems in science, engineering, or business

Working model of High-performance computing Lab: Fractal Image Generation using GPU

In order to improve computational performance Graphic Processing Units have been used instead of CPU's with limited capacity. CUDA (Common Unified Device Independent Architecture) provide core-wise programming. Like so many things in modern science and mathematics, discussions of "fractal geometry" can quickly go over the heads of the non-mathematically-minded. Clouds, mountains, coastlines, cauliflowers and ferns are all natural fractals. These shapes have something in common - something intuitive, accessible and aesthetic.

Without Grid Concept
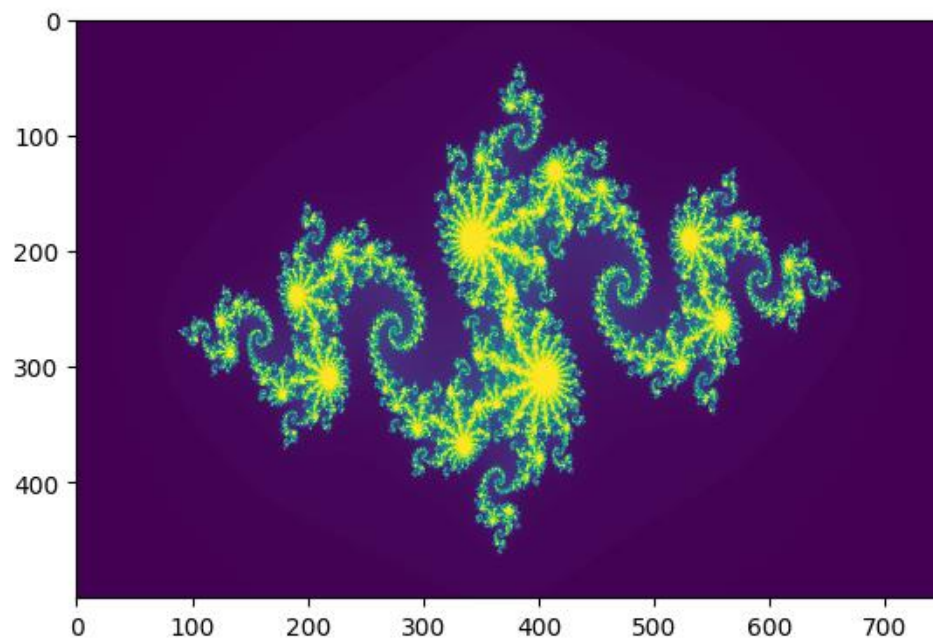
With Grid Concept
Hh
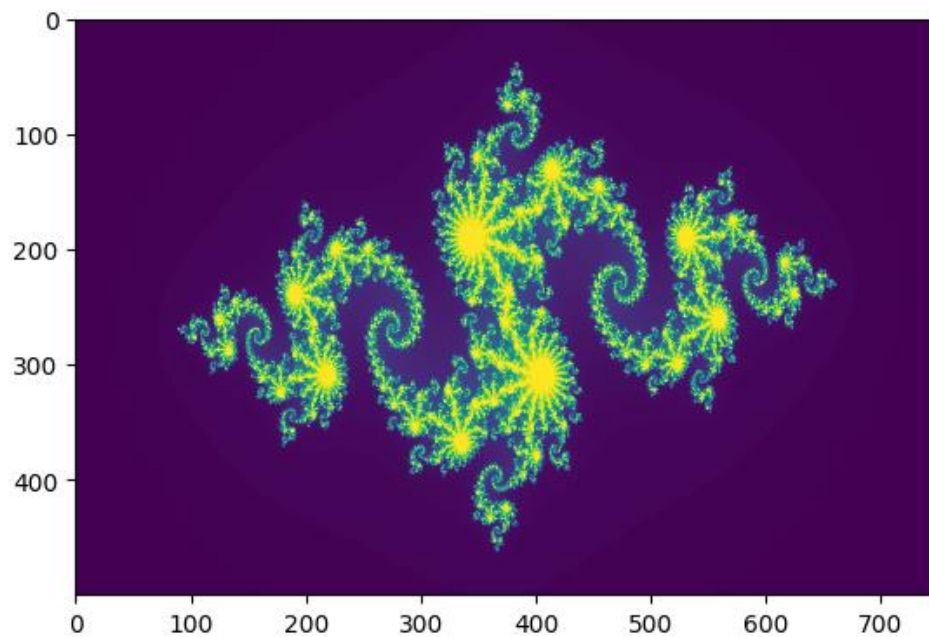
Publications:

- **Mallikarjuna Rao Gundavarapu**, M. Divya Satya Padma, Ch. Mallikarjuna Rao, D. V. Lalitha Parameswari & G. Saaketh Koundinya, "**GA-ANN Framework for Breast Cancer Classification Using NSGA-II,** *International Conference on Artificial Intelligence and Sustainable Engineering*, pp 407–418, April 2022.
- **G. Mallikarjuna Rao**, Ch. Mallikarjuna Rao, B. R. K. Reddy, D. V. Lalitha Parameswari & Mohammad Azeez, "Exploring the Novice Approach to Orthorectification of Satellite Imagery", *ICT Analysis and Applications* pp 143–154, February 2020.

- Dhadigi Naga Nishanth, **G. Mallikarjuna Rao**, "**Liveness Detection Based on Human eye Blinking for Photo Attacks**", *International Journal of Engineering and Advanced Technology (IJEAT)* ISSN: 2249 – 8958, Volume-9 Issue-1, October 2019.