



Module PMRF-ISSS051/2025

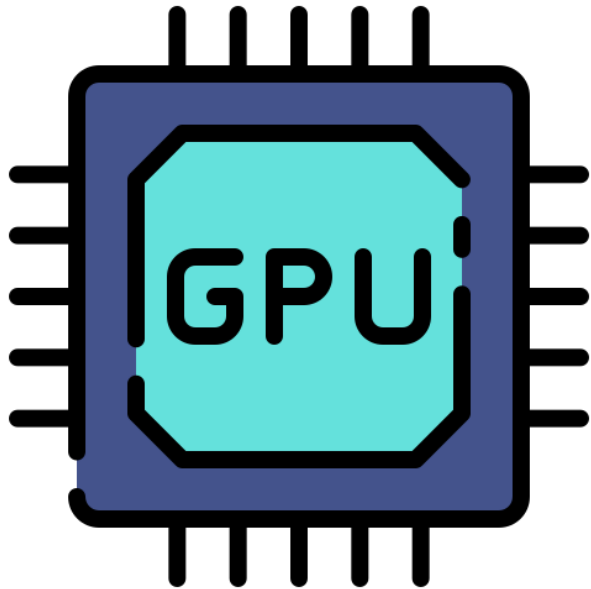
Introduction to CUDA

Name of the PMRF student

Roopkatha Banerjee

Required background of the students taught

Undergraduate Level



Details of the content of the module

Session 1 (0–3 Hours): Introduction & Basics

- Overview of CUDA and GPU computing
- CUDA programming model: host vs. device, thread hierarchy
- Memory types: global, shared, and local
- Write and compile a basic CUDA kernel
- Implement vector addition (CPU vs. GPU)
- Measure execution time using CUDA events

Session 2 (3–6 Hours): Intermediate CUDA Programming

- Thread divergence and synchronization
- Using shared memory effectively
- Parallel reduction (sum of array)
- Matrix-vector multiplication
- Shared memory optimization
- Implement one project: K-Means, SGD, or SVD-based image compression

Schedule of the module

Start Date: 10 May 2025

End Date: 11 May 2025

Classes: Evening 5-8 PM, Saturday and Sunday

Meeting link : Lectures will be uploaded.

Contact email ID: issf.forum@gmail.com

Registration link:

<https://forms.gle/W7YRGzvJD4VEj61A9>