

India's First Micro-GPU

***Prelims:** Current events of national and international importance | Science & Technology*

Why in News?

Recently, IIT Delhi researchers developed a working and demonstrable indigenous micro-GPU.

Key Features of IIT Delhi Micro-GPU

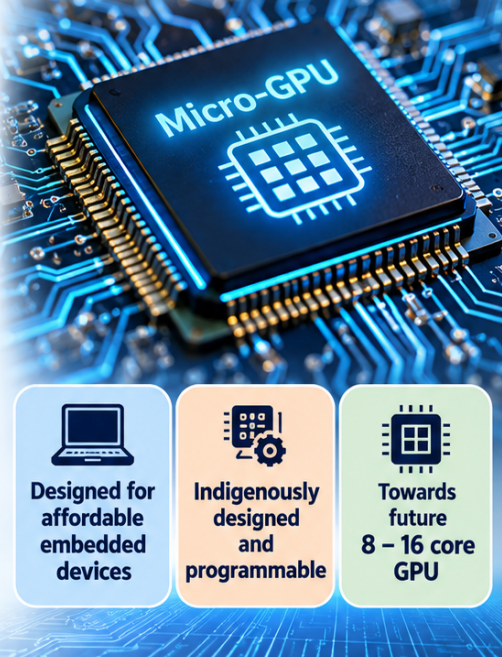
	Developed by	IIT Delhi
	Department	Electrical Engineering
	Nature	Indigenously designed
	Type	Programmable micro-GPU
	Demonstration platform	Spartan-7 FPGA
	Target	Affordable embedded devices
	Future implementation	FPGA or ASIC
	Current achievement	Working & demonstrable prototype
	Future architecture	8 – 16 core GPU
	Planned chip process	65 nm



SHANKAR
IAS PARLIAMENT



IIT Delhi





Designed for
affordable
embedded
devices

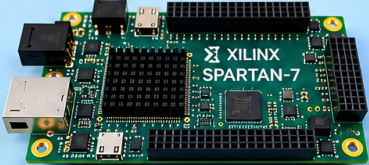


Indigenously
designed
and
programmable



Towards
future
8 – 16 core
GPU

- **Developed by** - Department of Electrical Engineering.
- **Demonstrated on** - Spartan-7 FPGA development board.
- **Claimed by** - The researchers as India's first working, demonstrable indigenously designed micro-GPU from a university.

FPGA Field Programmable Gate Array		ASIC Application-Specific Integrated Circuit	
			
	Full form		Full form
Field Programmable Gate Array		Application-Specific Integrated Circuit	
	Hardware nature		Hardware nature
Can be reprogrammed/reconfigured		Designed for a specific application	
	Use case		Use case
Useful for prototyping and development		Suitable for large-scale production	
	Flexibility		Flexibility
More flexible		More specialised	
	Relevance to IIT Delhi micro-GPU		Relevance to IIT Delhi micro-GPU
Demonstrated on FPGA (Spartan-7)		Future possibility: ASIC realisation	

GPU - Graphics Processing Unit

- A processor designed to efficiently handle **graphics, images, and visual data**.
- Conventional GPUs are commonly utilized in the following applications:
 - Computers
 - Smartphones
 - Gaming systems
 - AI and high-performance computing
- **Micro-GPU** - A compact, programmable graphics processor primarily intended for **basic graphics tasks and embedded system applications**, rather than for high-performance gaming or computing.

- **Potential Applications** - The micro-GPU is designed for integration into low-cost embedded systems, including the following applications:
 - Industrial display systems
 - Basic human-machine interfaces (HMIs)
 - **E-rickshaw dashboard navigation systems**
 - Navigation terminals for small fishing vessels
 - Educational e-book readers
 - Other devices that require **basic graphics processing capabilities**
- **Significance**
 - It facilitates the development of accessible and cost-effective computing platforms.
 - It enhances self-reliance in digital infrastructure and reduces import dependence.
 - It promotes innovation in embedded and edge devices.

Reference

[India Today | India's First Micro-GPU](#)

