

Intel® Unnati
Data-Centric Labs in Emerging Technologies

Give Your Students the Intel Edge.



Security

Today, there is a wide, and growing, skill gap between technical graduates and IT industry expectations. **To propel India's digital economy transformation, it is imperative that the higher education system in the country bridges this gap by developing new curricula and offering courses in emerging technologies.** The National Education Policy 2020¹ recognises this, and stresses the need for greater industry-academic linkages, and for higher education institutions to focus on research and innovation.

With the Intel® Unnati Program, you can keep pace with fast changing industry needs and expectations. It will help you:



Equip your students with industry relevant data-centric skills

In this age of data explosion, there is immense opportunity. Give your students the edge by equipping them with data-centric skills that will help them glean better insights and develop high-value solutions.



Unleash your students' creative potential

We, in India, have an incredible opportunity to unleash the creative potential of the largest student population in the world by training them in the right skills to drive India's digital transformation.



Build a strong reputation

With an Intel co-branded lab, you can be recognised as an institute that is committed to train your students in the latest technology to prepare them for industry, and focus on faculty development.



Build capability for the long term

Establish and maintain your leadership with the help of our System Integrator Associates. From Intel's recommendations for end-to-end technology labs set up and course content to training, customisations of your lab set up, or your maintenance and support requests, you can rely on them for all your needs.



Winning with the Intel® Unnati Community

With an Intel® Unnati Lab, you—and your faculty and students—become part of the Intel® Unnati Community, and get exclusive benefits:

- **Intel® Unnati Grand Challenge**, where students solve industry relevant, high impact problems through technology, with cash awards and the opportunity to be evaluated for internships at Intel
- **Intel® Unnati Ignite** workshops that offer hands-on experience with Intel technologies
- **Intel® Unnati Catalyst** co-sponsorships of events focused on new technologies
- **Intel® Unnati Industrial Training**, where qualifying students work for a month on industry relevant problems under the guidance of industry mentors
- **Intel® Unnati Research Launchpad**, which offers grants to faculty members for original research in new and emerging technologies

¹Ministry of Human Resource Development, Government of India, National Education Policy 2020, https://static.pib.gov.in/WriteReadData/userfiles/NEP_Final_English_0.pdf

Intel® Unnati Security

Cybersecurity refers to the protection of networks, devices, and data from unauthorised or unintended access or illegal use. As computers and the internet have become more interwoven with almost every aspect of our daily life, unfortunately, cyberattacks are also on the rise. Per a McKinsey report, cyberattacks are likely to cause \$10.5 trillion a year in damage by 2025¹.

What's more, there is a growing shortfall of skilled security professionals in this space, with India alone unable to fill 30% of jobs due to the skills gap².

Confidential Computing

Cybersecurity spans several domains including Data Security, Cloud Security, Network Security, Application Security and Hardware-based Security.



Today, data is often encrypted at rest, in storage and in transit across the network, but not while in use in the processor and memory. Confidential Computing is an emerging industry initiative focused on securing data in use, without exposing it to the rest of the system, enabling application and solution developers to take charge of their data security.

Learn about Intel® Software Guard Extensions

Intel® Software Guard Extensions (Intel® SGX), a Confidential Computing technology, offers hardware-based memory encryption that isolates specific application code and data in memory. Intel® SGX allows user-level code to allocate private regions of memory, called enclaves, which are designed to be protected from processes running at higher privilege levels.

Get introduced to Intel® Trust Domain Extensions

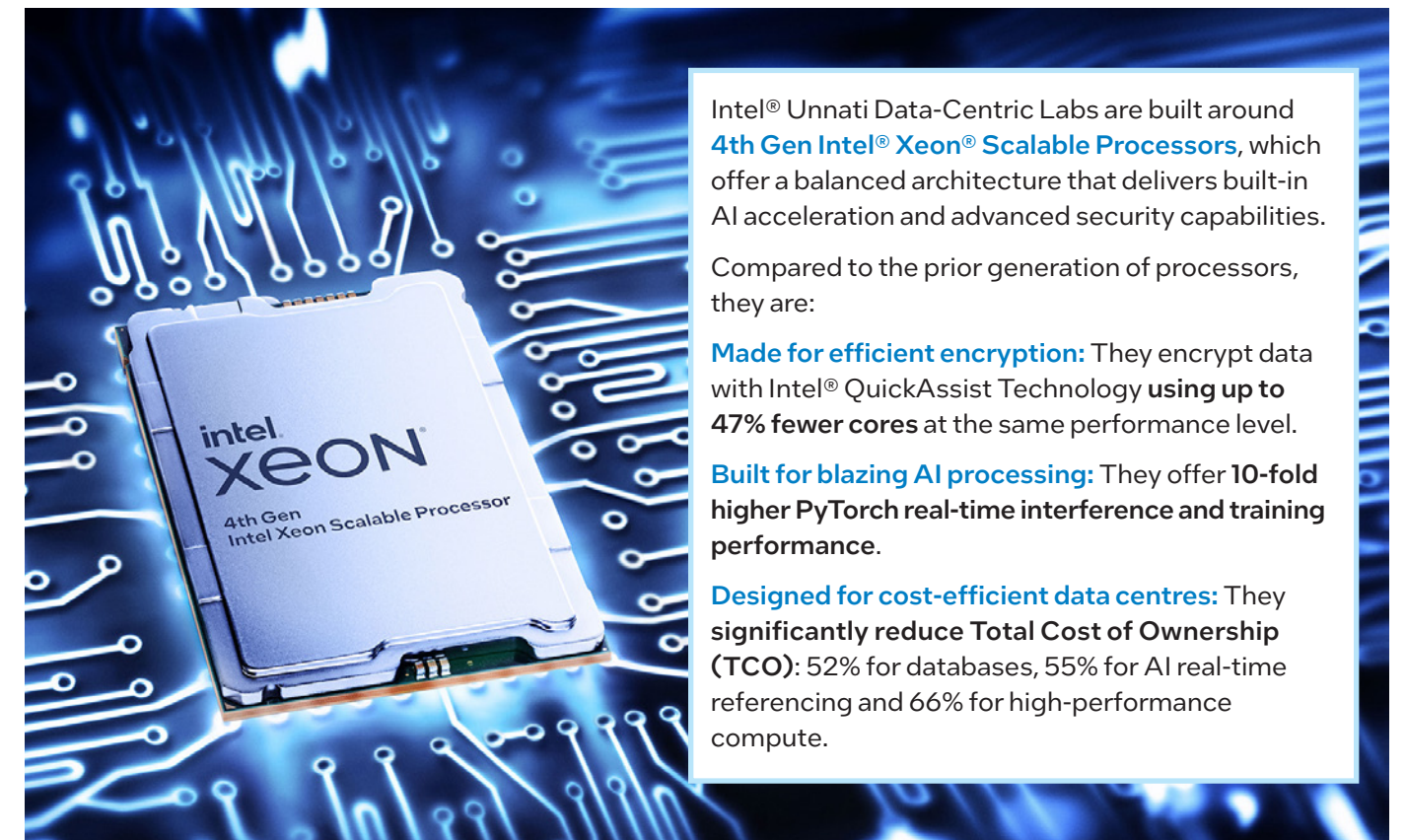
Intel® Trust Domain Extensions (Intel® TDX), is Intel's newest Confidential Computing technology. This hardware-based trusted execution environment (TEE) facilitates the deployment of trust domains (TD), which are hardware-isolated virtual machines (VM) designed to protect sensitive data and applications from unauthorised access.

40 hours of Course Content

The course content for this lab has been designed in collaboration with professors from Indian Institute of Technology, Kharagpur, and Intel technology experts. It will walk students through Computer Architecture and the associated security objectives, Cryptography Basics, Introduction to Virtualisation

and Confidential Computing, Intel® SGX theory concepts and lab exercises, as well as Intel® TDX theory concepts.

An advanced version of the course, which would cover Intel® TDX lab exercises, is also planned in the near future.



Intel® Unnati Data-Centric Labs are built around **4th Gen Intel® Xeon® Scalable Processors**, which offer a balanced architecture that delivers built-in AI acceleration and advanced security capabilities.

Compared to the prior generation of processors, they are:

Made for efficient encryption: They encrypt data with Intel® QuickAssist Technology using up to **47% fewer cores** at the same performance level.

Built for blazing AI processing: They offer **10-fold higher PyTorch real-time inference and training performance**.

Designed for cost-efficient data centres: They significantly reduce **Total Cost of Ownership (TCO)**: 52% for databases, 55% for AI real-time referencing and 66% for high-performance compute.

Suggested Lab Specifications



For a batch size of 30 students

- 2 Servers with 4th Generation Intel® Xeon® Scalable Processors with support for Intel® SGX
- Memory: At least 128 GB, with minimum 1 DIMM per channel
- Operating System: CentOS Stream 9 with Kernel v6.2
- 30 PCs/Laptops with Intel® Core™ i5 Processor or higher

¹ <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-cybersecurity>

² <https://www.thehindu.com/business/Industry/india-facing-huge-shortage-of-cybersecurity-professionals-teamlease/article66994515.ece>

To know more about how your institution can benefit from the Intel® Unnati Program, please contact:

