

Give Your Students the Intel Edge.

intel®

Artificial Intelligence

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.



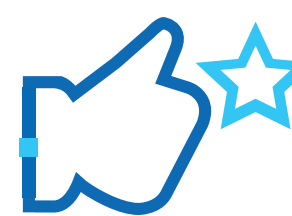
Unleash your students' creative potential

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

*Please work with the System Integrator Associate to understand the compute configuration that suits your requirement. Intel's recommendation is generic in nature and the lab setup is customisable.

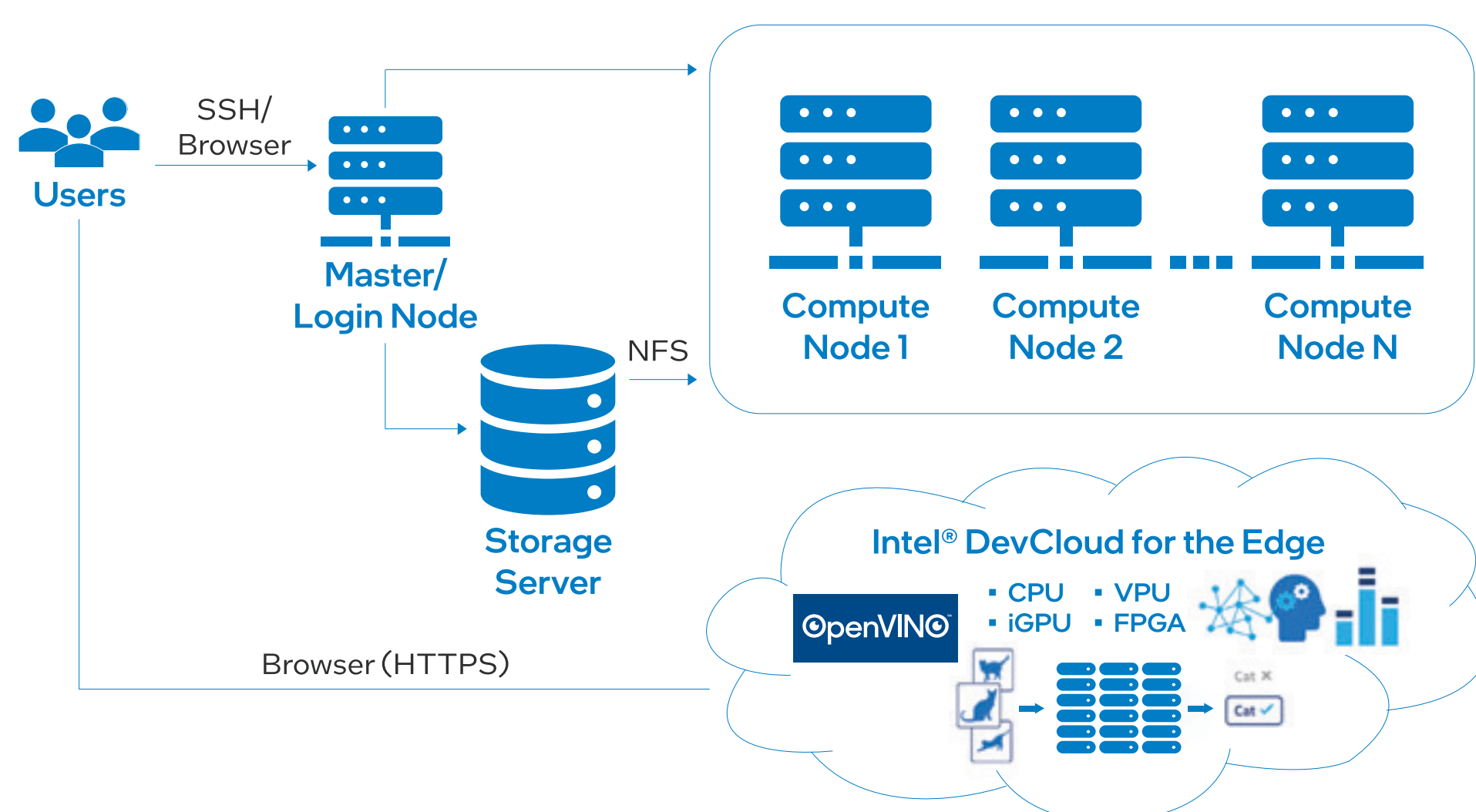
Intel® Unnati Artificial Intelligence

Build a Strong Foundation in AI

Understand Machine Learning (ML) and Deep Learning (DL) concepts from the ground up. Work through an end to end workflow to get practical understanding of what to expect when building AI solutions.

Get Ready for Edge Computing

Students learn how to deploy models targeting CPU, Integrated GPU, VPU, and FPGA, and to use pretrained models to accelerate development time.



Student-Centric UX

Students get a consistent learning experience no matter where they are, and can easily execute course exercises by connecting to their lab network using any PC—they just need a modern browser.

Showcase New Skills

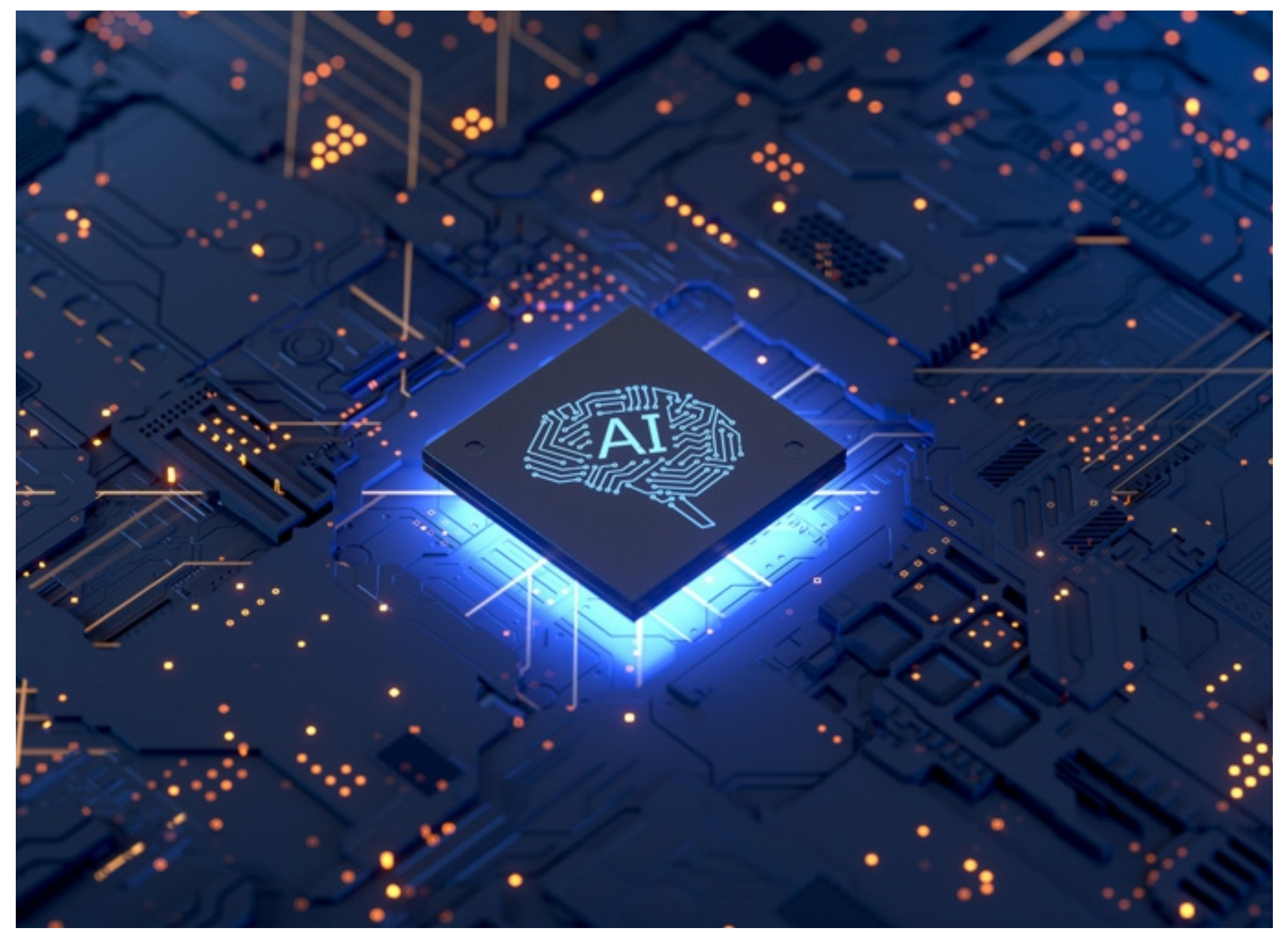
Students are awarded an Intel co-branded certificate at the completion of their course.

Coursework that Enables Learning by Doing

With an emphasis on hands-on exercises, the course covers Machine Learning, Deep Learning, and Deploying Models using Intel Distribution of OpenVino™ toolkit on modern Intel® architecture.

Custom Lab Deployments

Our System Integrator associates will assist you for customisations to your lab setup and training content to suit your needs.



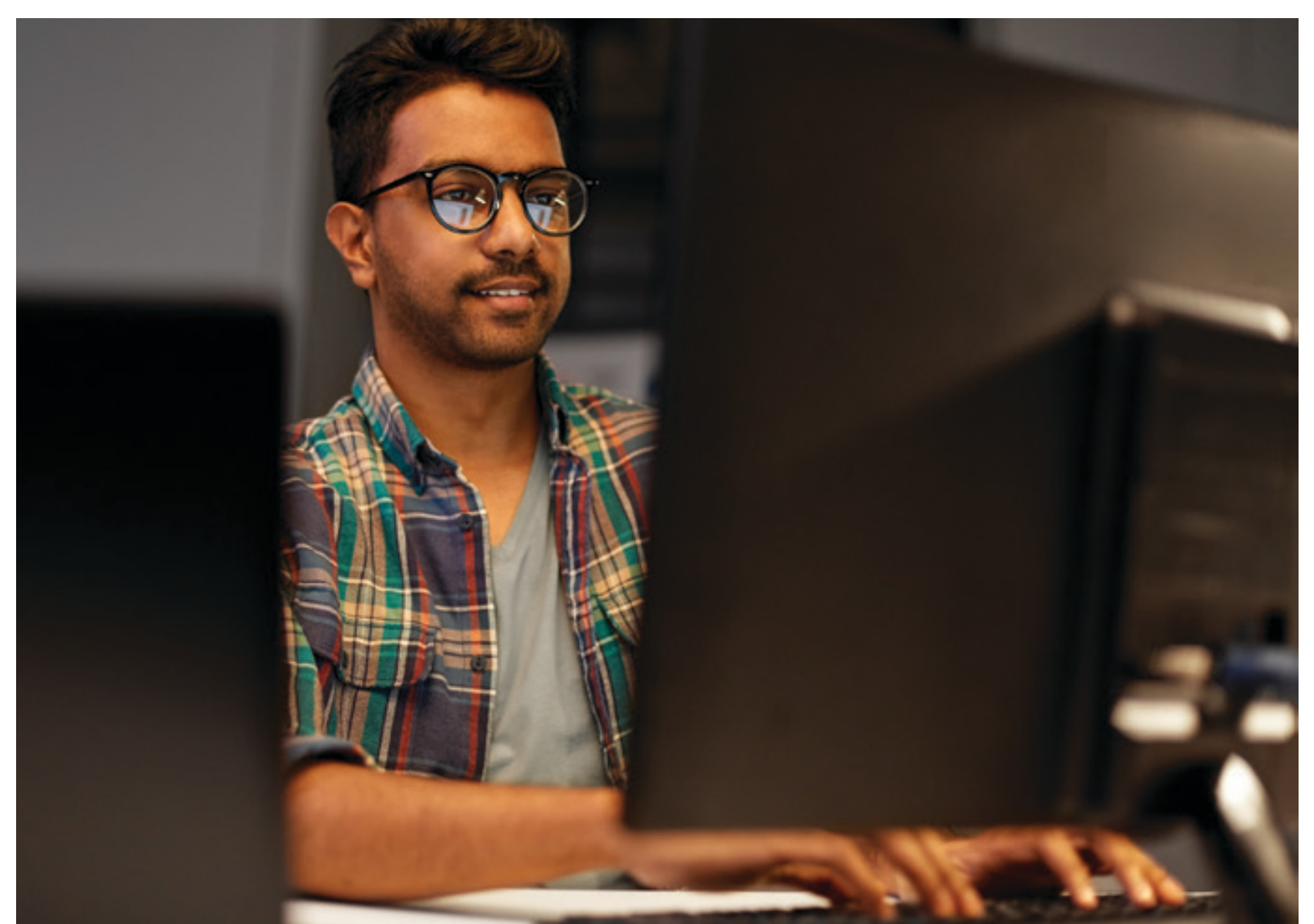
Towards a Digital Economy Powered by Data-Centric Skills

India aims to become a \$1 trillion digital economy by 2025, and this requires significant investment in 21st century infrastructure and software capabilities.²

The value pool is fundamentally shifting away from legacy technologies and towards digital—automation, cloud, cybersecurity, mobile, artificial intelligence (AI), 3-D printing, internet of things (IoT), big data analytics, and social media—at a pace even faster than anticipated just a few years ago. To emerge as an Information Technology and Business-Process Management (IT-BPM) leader, India needs to prepare people to develop advanced capabilities in these technologies.²

Enhancing the curriculum in higher education so that students and faculty are equipped with these data-centric skills is an important foundational element to make progress on this digital transformation journey.

²https://meity.gov.in/writereaddata/files/india_trillion-dollar_digital_opportunity.pdf



Intel AI



Artificial Intelligence has unleashed a new era of creativity and ingenuity. Today, Intel® technologies power some of the most promising AI use cases in business, society, and research. From massive cloud to tiny device, Intel turns the promise of a transformative AI model into a global-scale reality.

Intel's portfolio of Xeon® scalable processors, combined with AI-optimised FPGAs, VPUs, memory and storage technologies, and software solutions ease the process for deploying AI and data analytics in real-world applications.

Intel is committed to unlocking the promise of AI. To drive AI innovation, Intel is making strategic investments spanning R&D, technology, and partnerships with business, government, academia and community groups.

AI Builder Lab



For institutions that are seeking to go beyond lab exercises and invest in the next generation of AI Builders

Important notes relating to all Gen AI Lab Configurations

- 1. If Network File System (NFS) is installed, then all Intel software tools need to be installed only once through any of the compute nodes on to a network location visible to all nodes. If you don't have NFS, then only the runtime components of Intel tools need to be installed on the hard drive of every node.
- 2. Initialise MPI environment first before installing Horovod*. (source setvars.sh)

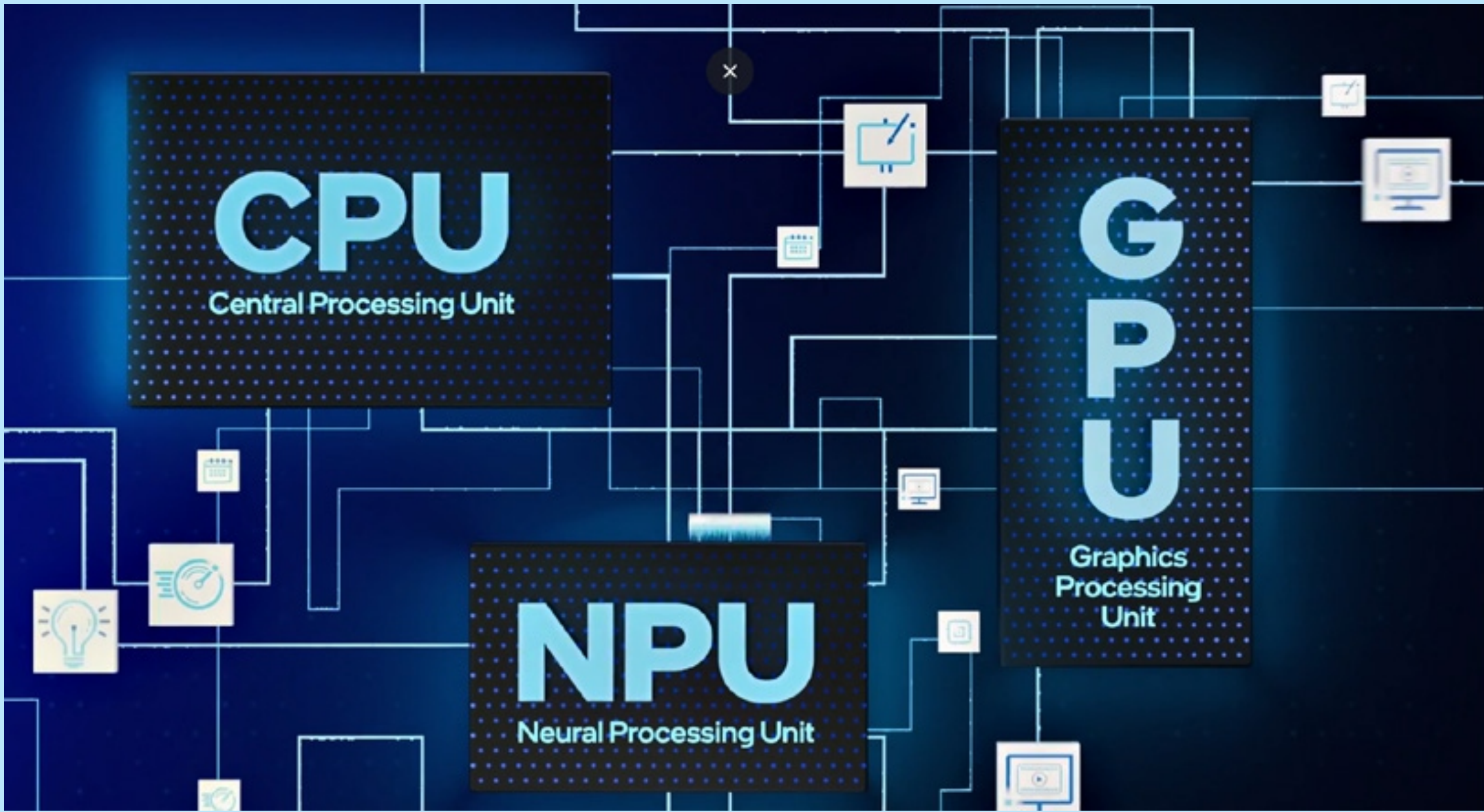
Minimum Suggested Specifications			
Hardware			Software
Server/Workstation	Component/Description	Quantity per System	
▪ 1 x Master Node/ Storage Node	2U Server, Dual SKT, supporting 5th Generation Intel® Xeon® Scalable Processors, Redundant Power Supply	1	▪ Ubuntu* 18.04 ▪ Intel® oneAPI Base Toolkit ▪ Intel® AI Analytics Toolkit ▪ Horovod* + Intel® MPI (for distributed DLtraining with TensorFlow*) ▪ Intel® Extension for PyTorch* (IPEX) ▪ Intel® Distribution of OpenVINO™ Toolkit ▪ JupyterHub* and JupyterLab* ▪ Keras*, ipykernel*, Seaborn* + other libs as required by exercises Note: Check https://software.intel.com/containers for available AI containers
	Intel® Xeon® Silver 4510, 30MB Cache, 2.4 GHz, 12 Core/24Threads	2	
	32GB DDR5-4800 ECC Reg DIMM	16	
	6TB 3.5' 6Gb/s 7.2K RPM Enterprise SATA HDD	4	
	8-Port RAID Controller Card with 2GB Cache	1	
	On-board/OCP/PCIe Card Dual 10GBASE-T Ports	1	
	Dedicated Management Port – Licences included	1	
	2 USB 3.0 (front) and 3 USB 3.0 (rear)	1	
	Single-Port 100Gb/s Ethernet Adapter with required cables	1	
	Rack Mount Rail Kit	1	
▪ 2 x Compute Nodes	1U Server, Dual SKT, supporting 5th Generation Intel® Xeon® Scalable Processors, Redundant Power Supply	2	
	Intel® Xeon® Gold 6530, 160MB Cache, 2.10 GHz, 32 Cores/64 Threads	1	
	32GB DDR5-4800 ECC Reg DIMM	16	
	960 GB M.2 SATA Drive X 1	1	
	On-board/OCP/PCIe Card Dual 10GBASE-T Ports	1	
	Dedicated Management Port – Licences Included	1	
	1 USB 3.0 (front) and 2 USB 3.0 (rear)	1	
	Single-Port 100Gb/s Ethernet Adapter with required cables	1	
▪ Primary Interconnect	24-Port 10GbE Ethernet Switch with required cables	1	
	24-Port 1GbE Ethernet Switch with required cables	1	
▪ 30 x User Nodes	AI PCs with Intel® Core™ Ultra Processors		

AI PCs: The New Paradigm

AI PCs use artificial intelligence technologies to elevate productivity, creativity, gaming, entertainment, security, and more. Intel® Core™ Ultra processors help AI PCs handle AI tasks locally and more efficiently. Whether you're working, collaborating, creating, or playing, Intel® Core™ Ultra processors help unlock the power of AI, create immersive graphics experiences, and enable high-performance low-power processing through three dedicated engines: the CPU, the GPU, and the NPU.

Fast Response

You can rely on the central processor (CPU) for smaller workloads at low latency.



High Throughput

The graphics processing unit (GPU) is ideal for large workloads that require parallel throughput.

Power Efficiency

The neural processing unit (NPU) handles sustained, heavily-used AI workloads at low power for greater efficiency.



AI Research Lab



For institutions that are seeking to build high-end research facilities for solving problems using AI

Minimum Suggested Specifications			
Hardware			Software
Server/Workstation	Component/Description	Quantity per System	
▪ 1 x Master Node/Storage Node	2U Server, Dual SKT, supporting 5th Generation Intel® Xeon® Scalable Processors, Redundant Power Supply	1	▪ Ubuntu* 18.04
	Intel® Xeon® Silver 4510, 30MB Cache, 2.4 GHz, 12 Core/24Threads	2	▪ Intel® oneAPI Base Toolkit
	32GB DDR5-4800 ECC Reg DIMM	16	▪ Intel® AI Analytics Toolkit
	6TB 3.5'6Gb/s 7.2K RPM Enterprise SATA HDD	4	▪ Horovod* + Intel® MPI (for distributed DLtraining with TensorFlow*)
	8-Port RAID Controller Card with 2GB Cache	1	▪ Intel® Extension for PyTorch* (IPEX)
	On-board/OCP/PCIe Card Dual 10GBASE-T Ports	1	▪ Intel® Distribution of OpenVINO™ Toolkit
	Dedicated Management Port – Licences included	1	▪ JupyterHub* and JupyterLab*
	2 USB 3.0 (front) and 3 USB 3.0 (rear)	1	▪ Keras*, ipykernel*, Seaborn*
	Single-Port 100Gb/s Ethernet Adapter with required cables	1	+ other libs as required by exercises
	Rack Mount Rail Kit	1	Note: Check https://software.intel.com/containers for available AI containers
▪ 6 x Compute Nodes	1U Server, Dual SKT, supporting 5th Generation Intel® Xeon® Scalable Processors, Redundant Power Supply	2	
	Intel® Xeon® Gold 6530, 160MB Cache, 2.10 GHz, 32 Cores/64 Threads	1	
	32GB DDR5-4800 ECC Reg DIMM	16	
	960 GB M.2 SATA Drive X 1	1	
	On-board/OCP/PCIe Card Dual 10GBASE-T ports	1	
	Dedicated Management Port – Licences Included	1	

AI Research Lab (continued)

Minimum Suggested Specifications			
Hardware			Software
Server/Workstation	Component/Description	Quantity per System	
▪ 6 x Compute Nodes (contd)	1 USB 3.0 (front) and 2 USB 3.0 (rear)	1	▪ Ubuntu* 18.04 ▪ Intel® oneAPI Base Toolkit ▪ Intel® AI Analytics Toolkit ▪ Intel® Distribution of OpenVINO™ Toolkit
	Single-Port 100Gb/s Ethernet Adapter with required cables	1	
	Rack Mount Rail Kit	1	
▪ 1 x GPU Nodes	2U Server, Dual SKT, supporting 5th Generation Intel® Xeon® Scalable Processors, Redundant Power Supply	1	
	Intel® Xeon® Gold 6530, 160MB Cache, 2.10 GHz, 32 Cores/64 Threads	2	
	32GB DDR5-4800 ECC Reg DIMM	16	
	960 GB M.2 SATA Drive X 1	1	
	On-board/OCP/PCIe Card Dual 10GBASE-T ports	1	
	Dedicated Management Port – Licences Included	1	
	Single-Port 100Gb/s Ethernet Adapter with required cables	1	
	Rack Mount Rail Kit	1	
▪ Primary Interconnect	24-Port 10GbE Ethernet Switch with required cables	1	
▪ Secondary Interconnect	24-Port 1GbE Ethernet Switch with required cables	1	
▪ 30 x User Nodes	AI PCs with Intel® Core Ultra Processors		

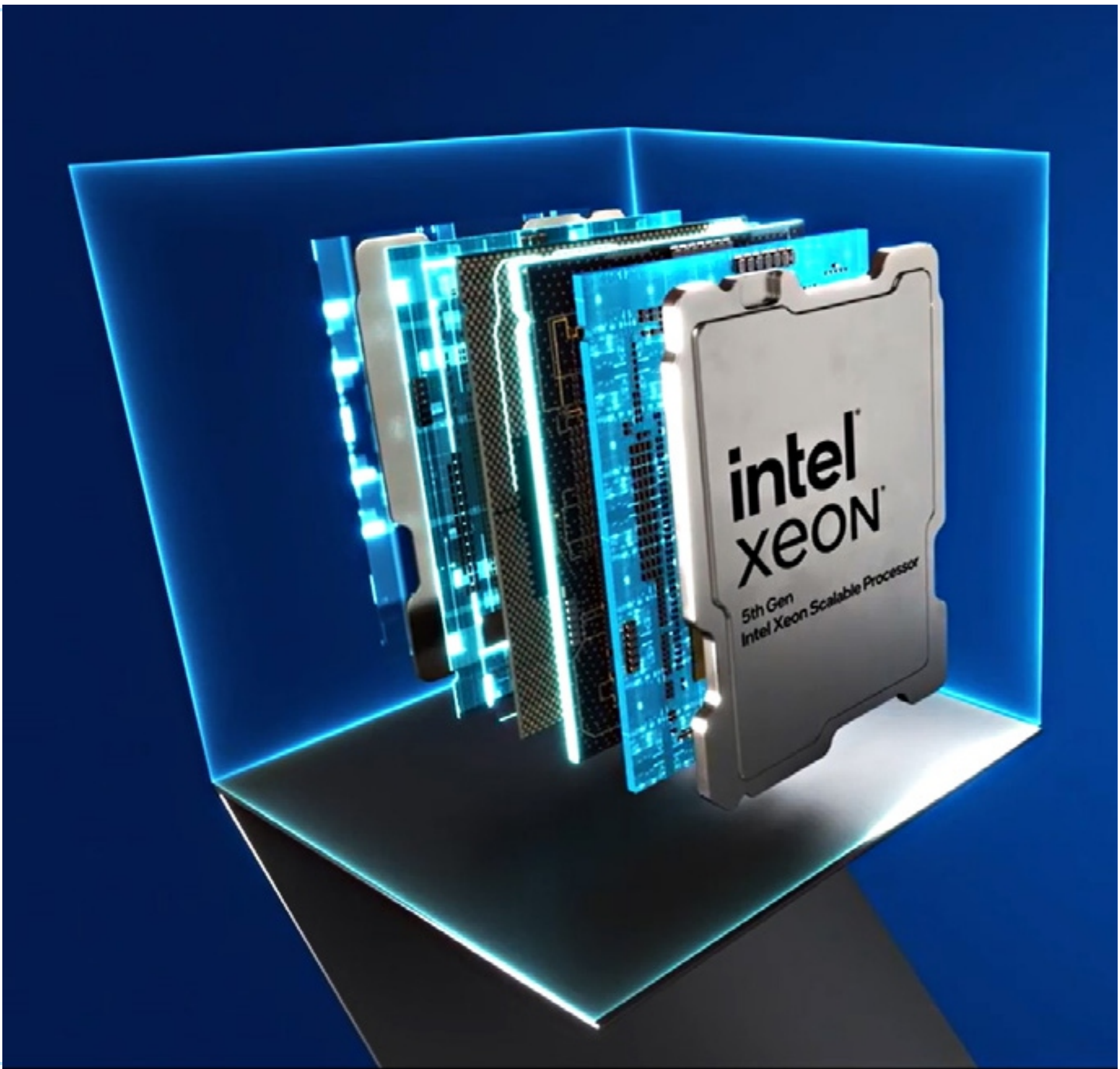
Intel® Unnati Data-Centric Labs are built around **5th Gen Intel® Xeon® Scalable Processors**.

Designed for AI, 5th Gen Intel® Xeon® processors have AI acceleration in every core and are ready to handle your demanding AI workloads—including deep learning inference and fine tuning on models up to 20 billion parameters¹.

With faster memory, larger last-level cache and more cores, 5th Gen Intel® Xeon® processors deliver impressive performance-per-watt gains, outsized performance, and lower Total Cost of Ownership (TCO) across all workloads, however demanding they may be.

Harness their power to turn data into knowledge and drive innovation forward.

¹Based on Intel internal modeling as of December 2023.



AI Research Lab (continued)

Minimum Suggested Specifications				
Hardware				Software
Server/Workstation	Component	Product Description	Quantity per System	
▪ 1 x GPU Node (Optional) <i>(continued)</i>	Accelerator Card	Intel® Vision Accelerator Design With Intel® Movidius™ Vision Processing Unit with support for up to 8 VPUs	2	
	Power Supply	1300W Power Supply	2	
	Dual Hyper Hybrid Controller	M.2 Card RT3EX020E with HW RAID	1	
	TPM	Version 2.0	1	
	M.2 Drive	480GB SATA	2	
	Front Bay 1, Drive 01	1.92T 2.5 NVME4	1	
	SATA Cable	Cable Kit CYPCBLHDHDX1	1	
	Networking IO Modules	X710-T2L for OCP 3.0	1	
	+ Heat sink, Riser Card, Rail Option (Please discuss with System Integrator for options)			
▪ 1 x Storage Server	50 TB space (or as per requirements)		1	
▪ Primary Interconnect: 36-port 100 Gbps Infiniband/OPA switch with rail kit and 2PSU ▪ Secondary Interconnect: 24-Port 10 GbE Ethernet switch with required number of 2m CAT6 cables				▪ Software for job scheduling and queueing

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

