

Intel® Unnati

Data-Centric Labs in Emerging Technologies

Give Your Students the Intel Edge.

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 2020[1] 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 your leadership and maintain it with the help of our System Integrator partners, who will get you Intel's recommendations for end-to-end Technology Labs set up, course content, and the training to go with it.

Leverage our System Integrator Partner Network

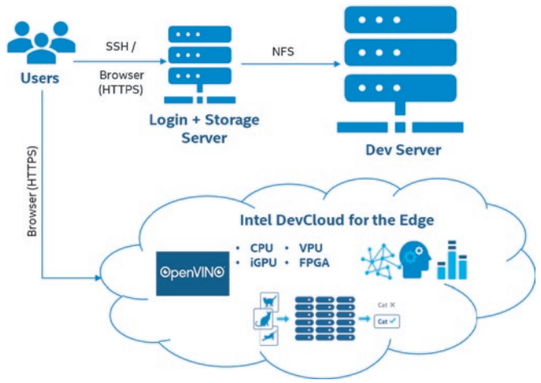
Be it training, customisations of your lab set up, or maintenance and support requests, you can rely on our strong System Integrator Partner Network for all your needs.

[1]Ministry 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
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.



jupyter

oneAPI

OpenVINO

ubuntu

intel. XEON GOLD · intel. CORE i7 · intel. MOVIDIUS · intel. ARRIA 10

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.

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 transform-ation journey.

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

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 partners will assist you for customisations to your lab setup and training content to suit your needs.



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.

Intel® Unnati AI Lab: Recommended Configurations

AI Starter Lab	Infrastructure	Minimum Suggested Specifications for 30 Users	
For institutions that are considering an affordable, yet capable, solution to kickstart their AI journey	**1 x Node** (Minimum 1 Physical Core and 8GB RAM per user)	• Dual Intel® Xeon® Gold 5318Y, 24 cores, 2.1 GHz base frequency, 36 MB cache • 256 GB Memory: 16 x 16 GB of 2993 MHz DDR4 ECC Registered Memory • 1 TB SSD	• Ubuntu* 18.04 • Intel® oneAPI Base Toolkit • Intel® AI Analytics Toolkit • Horovod* + Intel® MPI (optional, for distributed DL training with TensorFlow*) • JupyterHub* and JupyterLab* • Keras*, ipykernel*, Seaborn* + other packages as required by exercises **Note:** Check *https://software.intel.com/containers* for available AI containers
	1 x Login + Storage Server	• Intel® Xeon® Silver 4310, 12 cores, 2.1 GHz base frequency, 18 MB cache, 128 GB RAM • At least 10 GB disk space per user (Capacity should be based on estimate of total users who would utilise this lab)	• Ubuntu* 18.04
	+ Network Router with 4 RJ45 1Gbps Port, Power Delivery Unit (PDU), Patch Cables and Power Cable		
	1. OpenVino™ labs will be run on Intel® DevCloud for the Edge 2. Option Available to run ML and DL Labs on Cloud instead of on-premise		
AI Builder Lab	**Infrastructure**	**Minimum Suggested Specifications for 30 Users**	
For institutions that are seeking to go beyond lab exercises and investing in the next generation of AI Builders	**3 x Nodes** (Minimum 2 Physical Cores and 8GB RAM per user) **Note:** You could use 1 node as the Jupyter* server	• Dual Intel® Xeon® Gold 5318Y, 24 cores, 2.1 GHz base frequency, 36 MB cache • 256 GB Memory: 16 x 16 GB of 2993 MHz DDR4 ECC Registered Memory • 1 TB SSD	• Ubuntu* 18.04 • Intel® oneAPI Base Toolkit • Intel® AI Analytics Toolkit • Horovod* + Intel® MPI (for distributed DL training with TensorFlow*) • Intel® Extension for PyTorch* (IPEX) • Intel® Distribution of OpenVINO™ Toolkit **Note:** Check *https://software.intel.com/containers* for available AI containers **Jupyter* Server:** • Ubuntu* 18.04 • JupyterHub* and JupyterLab* • Keras*, ipykernel*, Seaborn* + other libs as required by exercises
	1 x Storage Server	• Rackmount 4 - Bay Network* Attached Storage, with at least 50GB disk space per user (Capacity should be based on estimate of total users who would utilise this lab)	
	1 x Login Server	• Intel® Xeon® Silver 4310, 12 cores, 2.1 GHz base frequency, 18 MB cache, 128 GB RAM, 500 GB SSD	• Ubuntu* 18.04
	+ Network Router with 1Gbps Ports, Network Switch, Rack Cabinet, Power Delivery Unit (PDU), Patch Cables and Power Cable		
	+ Software for job scheduling and queueing		
	1. OpenVino™ labs will be run on Intel® DevCloud for the Edge 2. Option available to run ML and DL Labs on Cloud instead of on-premise		

For important notes relating to the AI Starter Lab and the AI Builder Lab, please see overleaf.

AI Research Lab	Infrastructure	Minimum Suggested Specifications	
For institutions that are seeking to build high-end research facilities for solving problems using AI	**4 - 8 x Nodes**	• Dual Intel® Xeon® Gold 6330, 28 cores, 2.0 GHz base frequency, 42 MB cache • 256 GB Memory: 16 x 16 GB of 2933 MHz DDR4 ECC Registered Memory • 1 TB SSD	• Ubuntu* 18.04 • Intel® oneAPI Base Toolkit • Intel® AI Analytics Toolkit • Horovod* + Intel® MPI (for distributed DL training with TensorFlow*) • Intel® Extension for PyTorch* (IPEX) • Intel® Distribution of OpenVINO™ Toolkit **Note:** Check *https://software.intel.com/containers* for available AI containers
	1 x FPGA Inference Node (only Qualified† Servers)	• Intel® Xeon® Silver 4314, 16 cores, 2.4 GHz base frequency, 24 MB cache • 128 GB Memory: 8 x 16 GB of 2667 MHz DDR4 ECC Registered Memory • 1 TB SSD • 1-2 Intel® Programmable Acceleration Card with Intel Arria® 10 GX FPGA†	• Ubuntu* 18.04 • Intel® oneAPI Base Toolkit • Intel® AI Analytics Toolkit • Intel® FPGA Add-On for oneAPI Base Toolkit • Intel® Distribution of OpenVINO™ Toolkit (LTS Release only)
	1 x VPU Inference Node	• Intel® Xeon® Silver 4314, 16 cores, 2.4 GHz base frequency, 24 MB cache • 128 GB Memory: 8 x 16 GB of 2667 MHz DDR4 ECC Registered Memory • 1 TB SSD • 1-2 Intel® Vision Accelerator Design With Intel® Movidius™ Vision Processing Unit with support for up to 8 VPUs	• Ubuntu* 18.04 • Intel® oneAPI Base Toolkit • Intel® AI Analytics Toolkit • Intel® Distribution of OpenVINO™ Toolkit
	1 x Login Server	• Intel® Xeon® Silver 4310, 12 cores, 2.1 GHz base frequency, 18 MB cache, 128 GB RAM, 1 TB SSD	• Ubuntu* 18.04
	1 x Storage Server	• FreeNAS* 2U 1.5 PB 12 Bay 2.5”/3.5” plus Rear 2 x 2.5” SSD Bays	• FreeNAS*
	Ethernet Cards	• Intel® Ethernet 700 Series Network Adapters • *Upgrade to Intel® Ethernet 800 Series, which offers upto 100GbE, when available*	
	+ Network Router with 25-100Gbps Ports, Power Delivery Unit (PDU), Patch Cables and Power Cable		
	+ Software for job scheduling and queueing		

†Qualified servers: *https://www.intel.com/content/www/us/en/programmable/products/boards_and_kits/dev-kits/altera/acceleration-card-arria-10-gx/buy.html*

Important notes relating to all 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)

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

Copyright © 2021 Intel Corporation. All rights reserved. Intel, the Intel logo, Intel Inside, Arria, Core, Movidius, OpenVino and Xeon are trademarks of Intel Corporation in the U.S. and/or other countries. *Other names and brands may be claimed as the property of others.