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 associates, 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 Associate Network

Be it training, customisations of your lab set up, or your maintenance and support requests, you can rely on our strong System Integrator Associate 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
AIIoT

Harness the power of AI and IoT

As more devices get smart and connected, several usages are emerging where IoT and AI are being combined to make intelligent decisions. With demand in Edge Computing and AI with Computer Vision use cases only expected to increase, help your innovators stay ahead of the curve with labs that show them how to harness the power of these technologies.

Broad range of IoT developer kits and boards

Whether your innovators are working on advanced workloads with compute-intensive networks, or are new to IoT and require a simpler path without a steep learning curve, we have the right developer kits and boards for them to experiment and build with confidence.

Reference implementations

Get access to open-source IoT reference implementations across Retail, Healthcare, Industrial, and Surveillance domains. Deploy your own IoT solutions by using these prebuilt open-source projects.

Smooth running with Priority Support

Opt for the ***Product with Priority Support*** package for Intel® oneAPI Toolkits to get direct and private interaction with Intel's support engineers, and an accelerated response time for technical questions and other product needs.

Launchpad for the Next Big Venture

Inspire your innovators to start-up the next gamechanger with an environment that inspires. Some of the world's leading companies have emerged from incubator labs, and the next one could be from yours!

75% **of data will be created outside the data center** by 2023—in cities, factories, hospitals and stores.[1]

55% **of all data** is forecast to be generated by IoT in 2025.[2]

43% **of AI Tasks** will happen on edge devices in 2023.[3]

Industry leading design software

With industry leading Intel® Quartus® Prime Design Software and Intel® oneAPI Toolkits, get optimised performance from your Intel hardware.

Custom lab deployments

While this lab is designed to cater to a broad range of development requirements, please contact our System Integrator associate if you would like to customise it further, and they would be happy to support you.

[1] *https://www.intel.in/content/www/in/en/internet-of-things/overview.html*
[2] Data Age 2025, November 2018, *seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf*
[3] ABI Research, May 2018, *abiresearch.com/press/hardware-vendors-will-win-big-meeting-demand-edge-ai-hardware/*

Suggested Configurations

Intel Unnati AIIoT Starter Lab

For institutions that are considering an affordable, yet capable, solution to kickstart their journey into AI and IoT

Prerequisites
Students should be familiar with IoT basics and have a high level understanding of typical components required for IoT solutions, such as sensors, cameras, boards, etc

Item	Configuration	Quantity
Compute Node	• Dual Intel® Xeon® Gold 5318Y, 24 cores, 2.1 GHz base frequency, 36 MB cache • 256 GB Memory: 16 x 16GB of 2993 MHz DDR4 ECC Registered Memory • 1TB SSD	1
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)	1
Software #1	• Ubuntu* 18.04 • Intel® oneAPI Base and HPC 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 **Notes:** 1. Check *https://software.intel.com/containers* for available AI containers 2. OpenVino™ labs will be run on Intel® DevCloud for the Edge	Free Versions/ Open Source
+ Network Router with 4 RJ45 1Gbps Port, Power Delivery Unit (PDU), Patch Cables and Power Cable		
Edge Compute Kit (without VPU module)	• UP Xtreme* Edge Compute Enabling Kit with at least 16 GB RAM, 500 GB storage space	1
Edge Compute Kit (with VPU module)	• UP Xtreme* Edge Compute Enabling Kit with at least 16 GB RAM, 500 GB storage space, and UP AI Core XM 2280* module	1
Foundation Kits	• UP Squared AI Vision X* Developer Kit (with Camera), with AI Core X Mini PCIe card with the Intel® Movidius™ Myriad™ X Vision Processing Unit (VPU)	3
Robotics Developer Kit (Optional)	• UP Squared RoboMaker* Developer Kit with Intel® RealSense™ D435I camera	1
Monitors	• HDMI monitors (1 per kit)	5
Software #2	• Intel® Distribution of OpenVINO™ Toolkit • Intel® Edge Insights • Intel® Media SDK + other Development tools as needed by end users	Free

Intel Unnati AIIoT Research Lab

For institutions that are seeking to provide a leading edge lab for their students to learn the technologies of the future, and provide them with resources to innovate and bring their ideas to life

Item	Configuration	Quantity
Login Node/ Head Node	• Intel® Xeon® Silver 4310, 12 cores, 2.1 GHz base frequency, 18 MB cache, 128 GB RAM, 1 TB SSD	1
Compute 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	4-8
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 • 1TB SSD • 1-2 Intel® Programmable Acceleration Card with Intel® Arria® 10 GX FPGA†	1
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 • 1TB SSD • 1-2 Intel® Vision Accelerator Design With Intel® Movidius™ Vision Processing Unit (up to 8 VPUs)	1
Storage Server	• TrueNAS* 1U 120 TB or equivalent	1

†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*

Item	Configuration	Quantity
Ethernet Cards	• Intel® Ethernet 700 Series Network Adapters (minimum 10 GbE, recommended 25GbE)	Based on number of nodes
Software #1	• **Intel® oneAPI Base and HPC Toolkit** *Product Type:* Product With Priority Support *License Type:* Concurrent | *Use Type:* Academic *Nodes:* Multi-Node | *Support Years:* 3 Years *Supported:* 5 Concurrent Users/Maximum 25 Developers	1
Software #2 for AI	• Intel® AI Analytics Toolkit • Horovod* + Intel® MPI (for distributed DL training with TensorFlow*) • Intel® Extension for PyTorch* (IPEX) • Intel® FPGA Add-On for oneAPI Base Toolkit (on FPGA Inference Node only) • Intel® Distribution of OpenVINO™ Toolkit *(FPGA card will work with OpenVINO LTS Release only)*	Free/Open Source (Intel MPI included in HPC toolkit)
Software #3 for AI	• Third party software for job scheduling	1
Edge Compute Kits	• UP Xtreme Edge* with Intel® Core™ i3 processor with UP AI Core XM 2280* (2 VPUs) • UP Xtreme Edge* with Intel® Core™ i5 processor with UP AI Core XM 2280* (2 VPUs)	1 each
Foundation Kits	• UP Squared AI Vision X* Developer Kit (with Camera), with AI Core X Mini PCIe card with the Intel® Movidius™ Myriad™ X Vision Processing Unit (VPU)	5
Low Power Boards	• UP* Board with at least Intel® Atom™ x5-z8350 or newer generation processor	5
Robotics Developer Kit	• UP Squared RoboMaker* Developer Kit with Intel® RealSense™ D435I camera (can be purchased separately too)	3
Intel® FPGA Development Kits	• DE10-Standard Development Kit (FPGA board with Intel® Cyclone® V SoC)	2
	• Intel® Cyclone® 10 GX FPGA Development Kit	1
Depth Cameras	• Intel® RealSense™ LiDAR Camera L515	2
Monitors	• HDMI monitors	1 per kit
USB Cameras	• Third party USB Cameras	3
Software #4 for IoT Development	• Intel® Distribution of OpenVINO™ Toolkit (FPGA card will work with OpenVINO LTS Release only) • Intel® Edge Insights • Intel® Media SDK	Free
Software #5 for FPGA-based Development	• Intel® Quartus® Prime Pro Design Software • Intel® FPGA SDK for OpenCL™ Software Technology • Intel® SoC FPGA Embedded Development Suite (SoC EDS)	Free
Software #6 for Intel RealSense	• Intel® RealSense™ SDK 2.0	Free

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