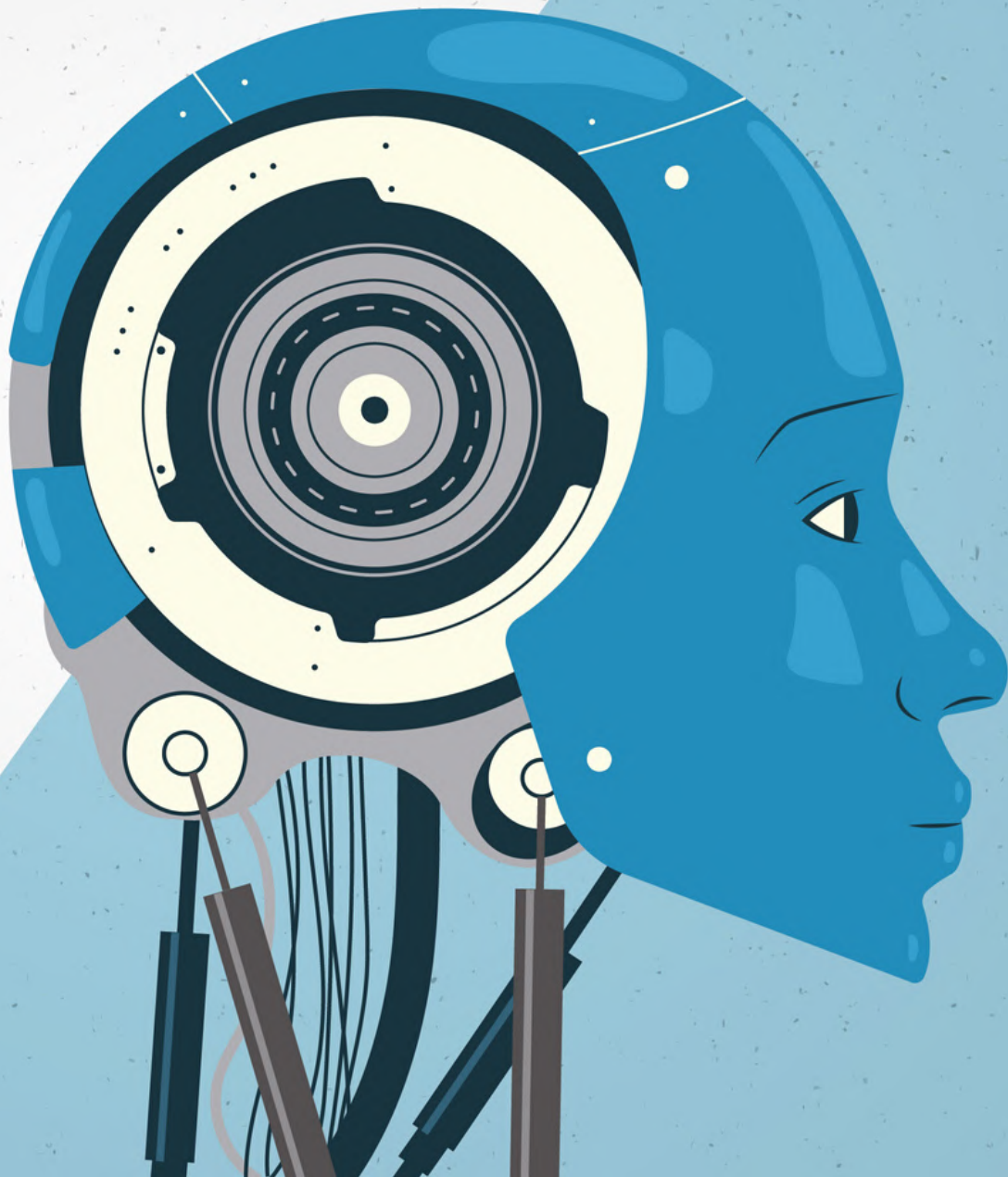




AI SOLUTIONS

Solutions For Your
Artificial Intelligence Workflow

**Center of Excellence of Artificial Intelligence,
DL / ML / Computer Vision**



OVERVIEW

ARGO-EDUETECH offers center of Excellence in Deep Learning, Machine Learning & Computer vision along with robotic platforms to implement your trained models and explore the new Skills for Researchers, students training. Centre of Excellence enables researchers and students Enables learning of various concepts of Deep learning accelerated by GPU, Online courses/Tutorials for Deep learning experimentation

THE FUTURE OF ARTIFICIAL INTELLIGENCE IS NOW

Artificial intelligence (AI) machine and deep learning — are decades-old technologies that are just now beginning to take off. Why is AI so hot right now? The reason is likely a convergence of multiple forces. First, the industry is making incredible breakthroughs in AI, especially in deep learning. Second, the mainstreaming of high-performance computing (HPC) is making advanced computing power available and affordable for a much wider range of companies. And third, there is a lot more data available to fuel AI — with more being produced every second. This perfect storm is creating an opportunity for you to quickly identify trends and patterns that otherwise would be difficult and time-consuming to detect. Whatever your industry/Educational vertical, machine and deep learning can change everything. Whether you're just getting started, or whether you've been doing AI, machine learning or deep learning for some time, we can help you capitalize on the latest technological advances, saving you time and money while reducing risk.

ARE YOU FACING ANY OF THESE CHALLENGES?

“We haven’t been able to take full advantage of our data.”

Data is growing at an astronomical rate and it's impossible to take full advantage of it manually to get insights to win. Automation can help provide faster, better and deeper data insights. Our Ready Solutions for AI, Machine and Deep Learning can provide the processing power required for the vast number of calculations that need to be made very quickly — for facial recognition, for example. With the speed of automated image and pattern detection, these solutions can help provide better data insights. And with historical data sets, you can get deeper insights into

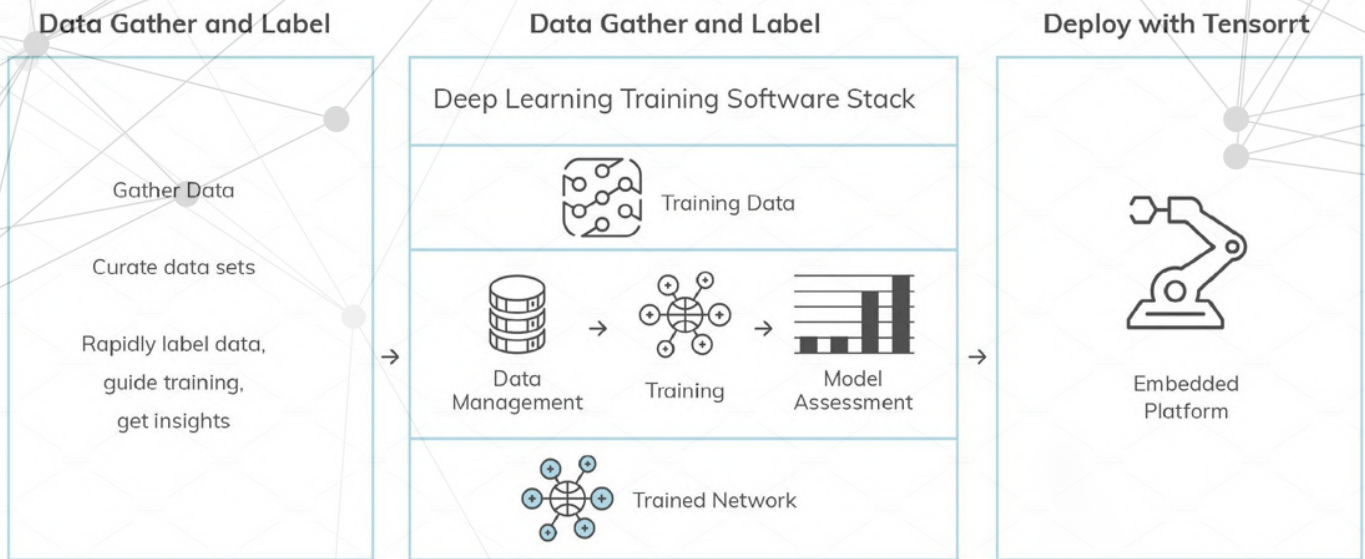
“We can’t afford to run machine and deep learning in the cloud.”

Some public cloud providers charge to get data out, and that can get expensive quickly with the large datasets required for deeper insights such as image recognition and fraud detection. Our Ready Solutions for AI, Machine and Deep Learning can reduce costs associated with moving significant amounts of data in and out of the cloud while minimizing risks.

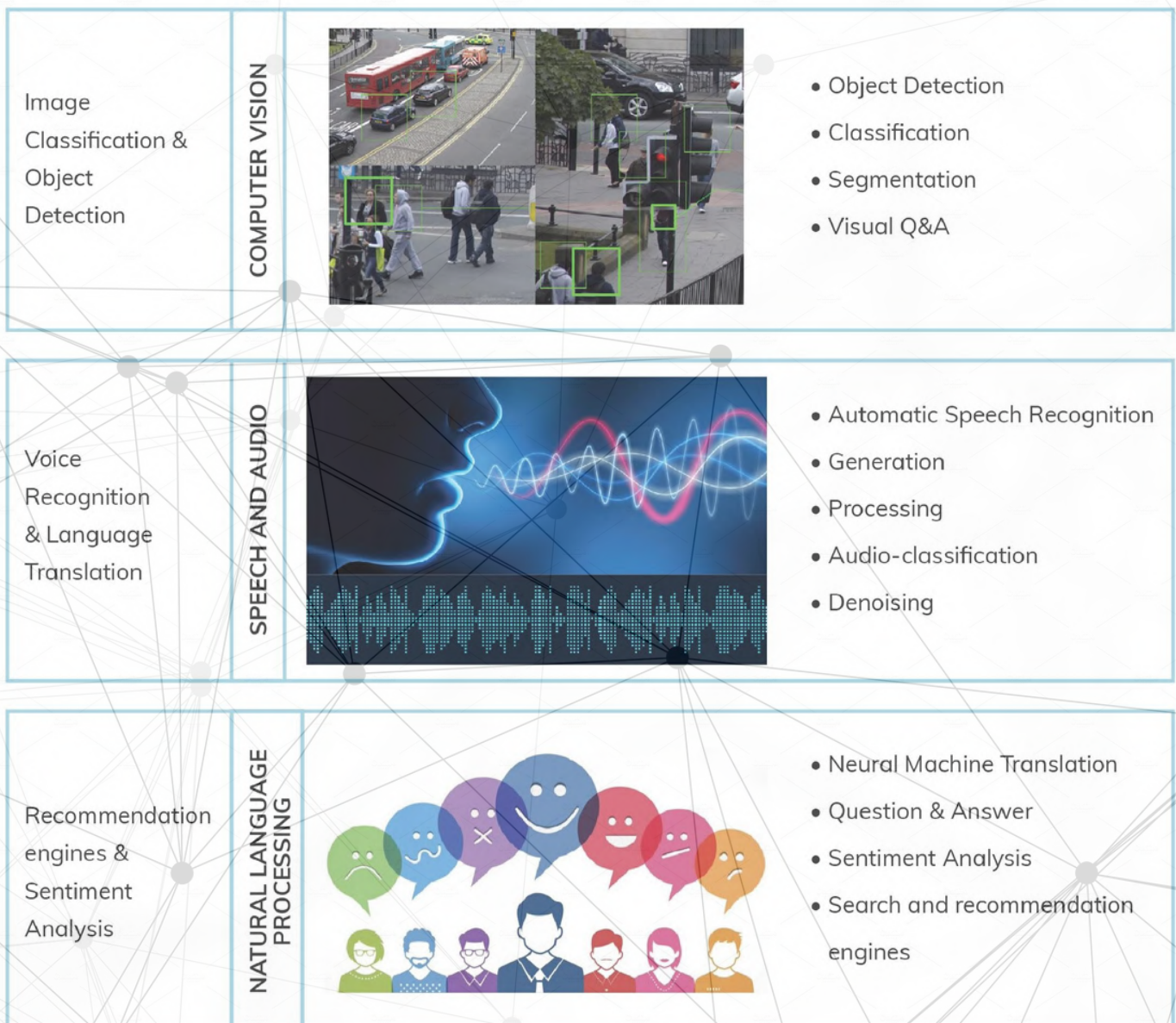
“We don’t have the in-house expertise.”

AI and related computing paradigms are emerging quickly and not many organizations have had the time or resources to develop the skills required to design, deploy and manage advanced machine and deep learning solutions. The ARGO-EDUETECH Innovation Lab team stays on the cutting edge of AI, testing new technologies, and tuning algorithms and applications to help you keep pace with the constantly evolving landscape. This team of industry and technology experts can help you achieve faster time to results by shortening both design cycle and configuration time. These experts can work with you to create a solution with the right features, at the right price.

DEEP LEARNING WORKFLOW



DEEP LEARNING APPLICATIONS



AI WORKFLOW SOLUTIONS

ARGO-EDUETECH Deep learning machines Enabled with NVidia GPU cards along with the required tools, Libraries and sample data sets provide the complete platforms for training and application development. Our Engineers can work with you to create solutions that can dramatically accelerate results in AI, Machine and Deep Learning environments. Our Machine and Deep learning solutions are based on a scalable building-block approach, so the solutions you buy today can grow to meet your needs in the future.

WE OFFER SOLUTIONS IN THREE CATEGORIES VIZ. SILVER, GOLD AND PLATINUM CLASSIFIED ON THE BASIS OF COST AND COMPUTING POWER

SILVER – Workstation Chassis

Model: S1	Model: S2
CPU: 8 Core CPU, 32GB RAM GPU: 16GB,2500+ CUDA Cores Storage: 1TB; HDD, 256GB SSD	CPU: 8 Core CPU, 32GB RAM GPU: 24GB,4500+ CUDA Cores Storage: 1TB; HDD, 256GB SSD



Workstation Chassis



Server Chassis

GOLD – Workstation chassis

Model: G1	Model: G2	Model: G3*
CPU: 12 Core CPU, 64GB RAM GPU: 2X 16GB,2500+ CUDA Cores Storage: 1TB; HDD, 256GB SSD	CPU: 12 Core CPU, 64GB RAM GPU: 2X 24GB,4500+ CUDA Cores Storage: 1TB; HDD, 256GB SSD	CPU: 12 Core CPU, 64GB ECC RAM GPU: 2X 24GB,4500+ CUDA Cores Storage: 2TB; HDD, 256GB SSD

*ModelG3 can be upgraded with 2X CPU, 4X GPU, 128GB EOC RAM

PLATINUM – SERVER CHASSIS

Model: P1	Model: P2	Model: P3
CPU: 2X12 Core CPU, 128GB ECC RAM GPU: 4X 16GB,2400+ CUDA Cores Storage: 2TB; HDD, 512GB SSD	CPU: 2X12 Core CPU, 128GB ECC RAM GPU: 4X 24GB,4500+ CUDA Cores Storage: 2TB; HDD, 512GB SSD	CPU: 2X16 Core CPU, 256GB ECC RAM GPU: 2X 16GB with NVLink, 5000+ CUDA Cores Storage: 2TB; HDD, 512GB SSD

LAB RESOURCES



Software Libraries:

The setup also contains the following libraries, utilities, tools and SDKs pre installed.

- NVidia AI/Deep learning Software/Libraries
- Tensor Flow
- Caffe, Caffe2
- Visual Q&APyTorch, Torch
- Theano
- Misc: Numpy, Scikit, pandas, other relevant pylibs
- Essentials: CUDA, cuDNN, TensorRT
- OS: Ubuntu 14.04 or 16.04 with preinstalled tools
- Datasets: Image Net, CIFAR-10, KITTI pre-loaded for Out-of-box development

EMBEDDED INFERENCE PLATFORM

AN Embedded GPU hardware is provided with the setup which helps the learner to understand the methods of inferring a trained model/network to an embedded platform .

While traditional Deep learning applications are trained to deliver accurate results, deep learning neural network applications are trained—and then taught to make inferences to handle a broader class of inputs and deliver constantly improving results.

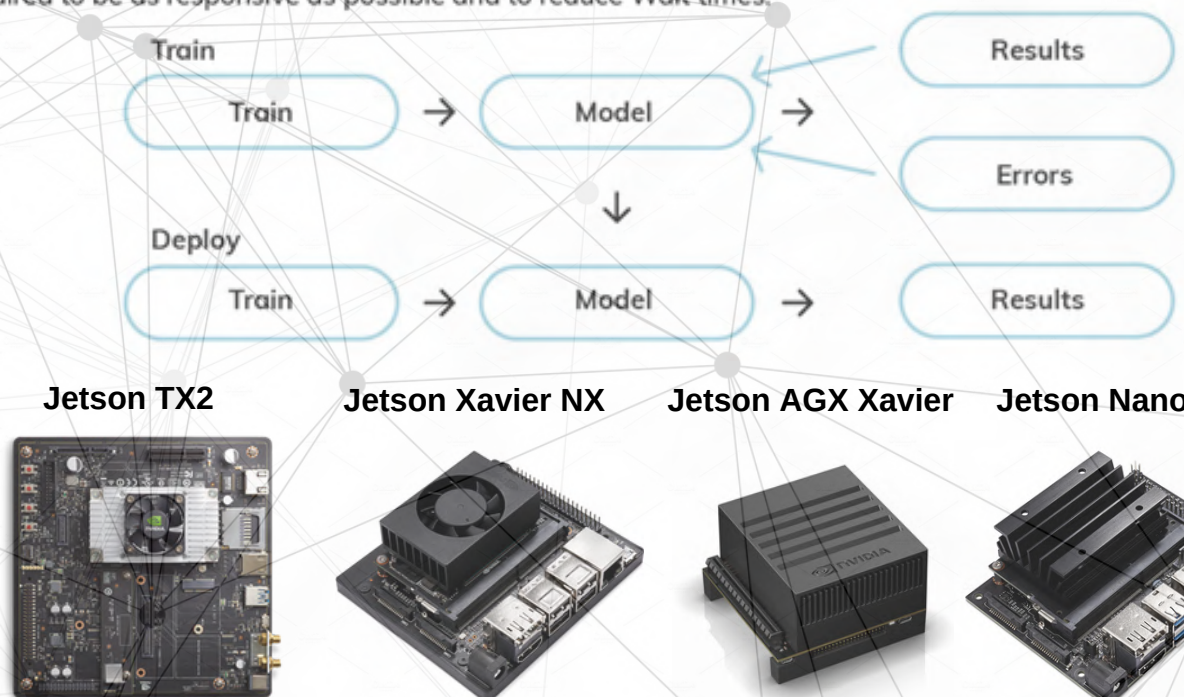
After forward propagation is completed, the results are compared against a set of well-understood correct answers to validate and compute for error data. The backward propagation stage sends errors back through the network's layers and updates their weights using a gradient descent algorithm. This helps the process improve its performance to the appropriate level. For example, if an application needs to be right 99.9% of the time, the learning process will be more rigorous than if it only needs to be right 80% of the time.

Training a deep neural network involves designing parameters that include examples of inputs and suggested outputs. Training can last several hours or several weeks, depending on the complexity of the task, and uses forward and backward propagation.

After training, the deep learning neural network is deployed to run inference computations using its previously learned parameters to classify, recognize, and process unknown inputs.

Inference is extremely useful for classifying images, localizing faces, or real-time speech translation.

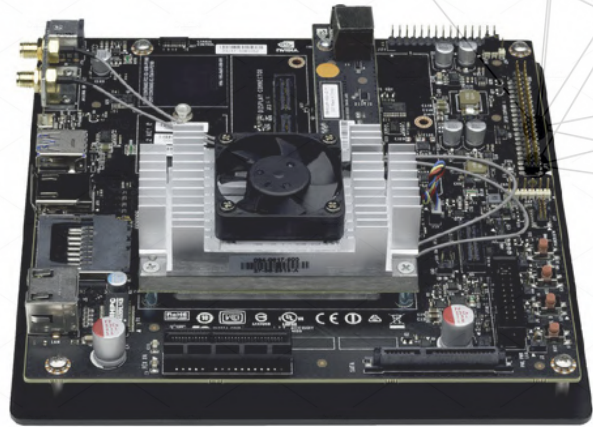
In the inference phase, the system learns how to learn so that its outputs get better and better over time (and in real-time). For inference, the performance goals are different from those associated with training. To minimize the network's end-to-end response time, inference typically batches a smaller number of inputs than would be used for training. Use cases relying on inference—for example, machine vision for an autonomous car—are required to be as responsive as possible and to reduce Wait times.



ADVANCED IMAGE/VIDEO PROCESSING GPU KIT

Features of Kit

- Hexa Core CPU
- 256-Core Pascal GPU
- 8GB LPDDR4, 128-bit interface
- 32GB eMMC
- 4kp60 H_264/H_265 encoder & decoder
- Dual ISPs (Image Signal Processors)
- 1.4 gigapixel/sec MIP CSI camera ingest for higher frame per second
- Ports and Peripherals includes HDMI 2.0, Ethernet, Bluetooth, USB 3.0, WIFI, SATA, SD CARD, UART, SPI, I2C, GPIO etc.



Research Area

- Machine vision
- Robotics
- Deep learning Model Inference
- Machine Learning
- Medical Imaging
- Gaming
- Virtual Reality
- NLP\ and many more....

Skill Sets



Image
Processing



Image
Rendering



Parallel
Computing



Hardware
Accelerated Graphics



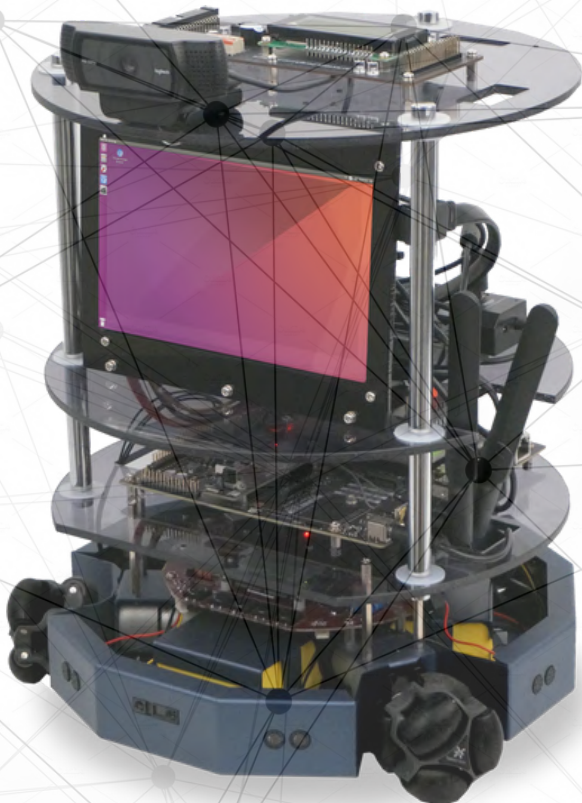
Hardware
Accelerated Image
Rendering



TensorFlow

TensorFlow-based AI Education Platform with Object & Letter Recognition Function

- It is able to experience high levels of computation speed with high-performance GPU.
- Provides real-time image processing service using the attached camera.
- The robot driver module enables the DC motor required for robot design and omni-wheel control technology to be moved in all directions.
- It is possible to acquire the technology using the ultrasonic sensor and the infrared distance sensor (PSD), and it is able to learn various things such as object detection and obstacle recognition by intelligent robot application.
- By adopting Arduino, an open electronic control platform, the robot driver module minimizes the specificity required for hardware control, and can generalize the method of acquiring status information from the motor control and sensors required for operation definition.



Online Learning Courses

Deep Learning Lab Course

The Deep Learning Lab course is designed to offer 18 different hands-on activities on the Deep Learning Lab setup offered by Edutech Learning Solutions. This course enables the user to get started with experimentation on Deep Learning Development Environment. This course will enable you to take your first step in the direction of Deep Learning with variety of examples that ranges from beginner to advance. You will learn different deep learning frameworks with some common objective so as to see the similarities and differences between them. The course also includes some application case studies to understand how specific approach is required for them. So in a sense this course provides a place for experimenting with different frameworks and methods enabling the learner to get familiar with working on Deep Learning applications.

Features of this course includes the use of

- NVidia AI/Deep learning Software /Libraries
- Tensor Flow
- Caffe , Caffe2
- PyTorch
- Theano , DIGITS
- Misc: Numpy, Scikit, pandas, other relevant py libs
- Inference of trained model on embedded GPU board using CUDA /cuDNN/ TensorRT

Course Experimentation includes:

- Introduction to Deep Learning
- Image Classification with DIGITS
- Object Detection with DIGITS
- Object Detection over KITTI dataset with DIGITS
- Semantic Segmentation using DIGITS
- Medical Image Segmentation using DIGITS
- Signal Processing using DIGITS
- Train a Generative Adversarial Network using DIGITS
- Training an image auto encoder with DIGITS
- Binary Segmentation using DIGITS
- Linear/ Image Classification with Tensor Flow
- Demonstrating the implementation of remote inference of a trained deep learning model on embedded board/platform

Computer Vision and Deep Learning case studies

Hands-on with Computer Vision and Deep Learning is one of it's kind course which focuses on rigorous hands-on implementation of Computer Vision and Deep Learning applications and case studies. For our implementation we are using the state-of-art frameworks like OpenCV, dlib etc. This course starts with the implementation of basic image processing operations, followed by basic computer vision and deep learning implementations and ending with case studies on the same. This course will be very helpful to those who want to implement and bring their ideas into action regarding computer vision and deep learning. Each tutorial in the course is designed in the form of modules, i.e., a step by step guide to understand and write the code for developing the application.

Benefits To Institute & Students

For Students:

- Introduction to the latest prevailing topic in the industry today
- Introduce new methods and tools required for experimentation
- Experimentation is redesigned as per the need of today's industry
- Promoting doing and learning approach making the learner understand the concept practically
- Skill oriented experimentation makes the learner more employable
- Encourages research work in addition to curriculum requirements.

For faculties:

- Useful resources for consultation related activities involving industry and academia
- New techniques and tools help the faculties to explain the technical content easily and practically.
- The proposed setup is designed to help the faculties to do the research activities and support the curriculum
- Documentation provided with the setup enables the faculties to easily understand the operational and technical features of the setup

Other Indirect benefits:

- Useful in conduction of in-house up gradation programs for the faculties and students
- Converting labs into learning centers where different weekend/short, term training programs can be offered to the students as well as industry personals.
- Increase the scope of industrial consultancy
- A suitable revenue generation model can be established for self-sustaining of the laboratory activities
- Creating A man force for the industry needed helps in Recruitement.

Our programs help the students to create breakthrough projects for the growth of the industry. They also help the students in resolving real time industry challenges and create patents during the tenure of their regular degree programs while doing their projects. The emphasis of all our programs is more on passions, imagination, creativity and intrapreneurship. Intrapreneurs are students with growth ideas, which are executed by the industries for faster growth. Therefore, all the students work in different industry domains and they become the part of creative leadership pipeline and develop healthy innovation pipeline for enhanced value creation.



POWERING CHANGE WITH AI AND DEEP LEARNING

AI doesn't stand still. It's a living, changing entity that powers change throughout every industry across the globe. As it evolves, so do we all. From the visionaries, healers, and navigators to the creators, protectors, and teachers. It's what drives us today. And what comes next.

LEARN

BUILD

SHARE



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