

Course Content for AI Lab

Machine Learning on Modern Intel Arch (Duration: Approx15hrs)

Prerequisites: <ul style="list-style-type: none"> • Python programming • Calculus • Linear algebra • Statistics 	Learning Outcomes: <ul style="list-style-type: none"> • Supervised learning algorithms • Key concepts like under- and over-fitting, regularization, and cross-validation • How to identify the type of problem to be solved, choose the right algorithm, tune parameters, and validate a model • Unsupervised learning 	Lab Exercises: <ul style="list-style-type: none"> • Supervised Learning and K Nearest Neighbors • Train Test Splits, Cross Validation, and Linear Regression • Regularization and Gradient Descent • Logistic Regression and Classification Error Metrics • Clustering Methods
--	---	--

Deep Learning on Modern Intel Architecture (Duration: Approx18 hrs)

Prerequisites: <ul style="list-style-type: none"> • Python programming • Calculus • Linear algebra • Statistics • Machine Learning Course 	Learning Outcomes: <ul style="list-style-type: none"> • Techniques, terminology, and mathematics of DL • Fundamental neural network architectures, feedforward networks, convolutional networks, and recurrent networks • How to appropriately build and train models • Various deep learning applications • How to use pre-trained models for best results 	Lab Exercises: <ul style="list-style-type: none"> • Handwritten Image Detection with Keras using MNIST data • Building a CNN to classify images in the CIFAR-10 Dataset • Transfer Learning using MNIST data • Using Pre-Trained Models • Classifying CIFAR-10 with Data Augmentation • Hands on E2E workflow using an image classification problem.
---	---	---

Deploy on Modern Intel Arch using Intel Distribution of OpenVino Toolkit (on Intel® DevCloud for Edge) (Duration: Approx10 hrs)

Prerequisites: <ul style="list-style-type: none"> • Python programming • Machine Learning Course • Deep Learning Course 	Learning Outcomes: <ul style="list-style-type: none"> • Learn about Intel® Distribution of OpenVino toolkit for DL inference • Model Optimizer and Inference Engine • Accelerators based on Intel® Movidius™ Vision Processing Unit • Accelerators based on Intel® Arria® FPGA • Using Multiple Models in One Application • DL Workbench • DL Streamer (Optional) 	Lab Exercises: <ul style="list-style-type: none"> • Object Detection, Classification, Style Transfer • Accelerated Object Detection • Real-world use cases reference implementations – 1 from Healthcare, 1 from Industrial, 1 from Retail
---	---	--