CLOUD x LAB

eict
IIT Roorkee

CERTIFICATION PROGRAM

Machine Learning Specialization

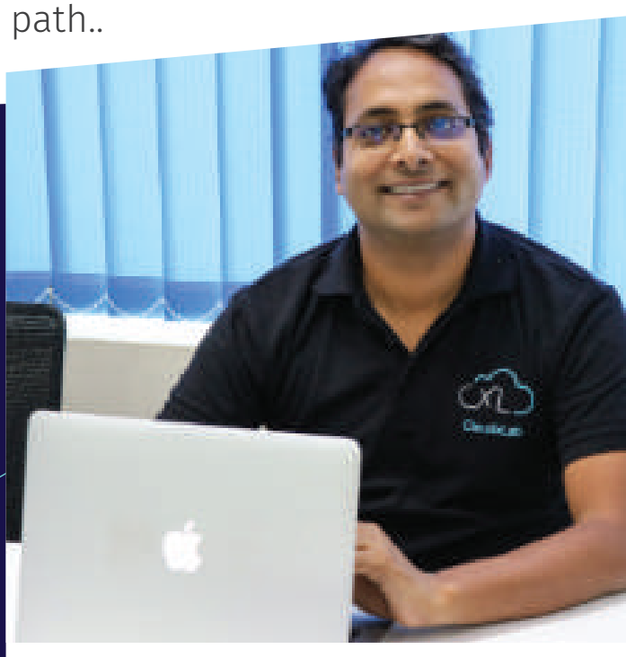
6 Months | Online Self-paced Course

CloudxLab & Course

At Cloudxlab, we are building one of the best gamified learning environments to make technology learning fun and for life. More than 50,000 users across the world have been benefited by our signature courses on Machine Learning and Big Data. Our vision is to upskill people on high-end technologies like Deep Learning, Machine Learning, Big Data and make them employable.

Every domain of computing such as data analysis, software engineering, and artificial intelligence is going to be impacted by Machine Learning. Therefore, every engineer, researcher, manager or scientist would be expected to know Machine Learning.

So naturally, you are excited about Machine learning and would love to dive into it. This specialization is designed for those who want to gain hands-on experience in solving real-life problems using machine learning and deep learning. After finishing this specialization, you will find creative ways to apply your learning to your work like building a robot which can recognize faces or change the path after discovering obstacles on the path..



Sandeep Giri
Founder at CloudXLab

About E&ICT Academy, IIT Roorkee

E&ICT Academy, IIT Roorkee provides training programs with an emphasis on hands-on learning in basic/advanced topics and emerging technologies. The project is sponsored by the Ministry of Electronics and Information Technology, Govt. of India. E&ICT Academy courses are recognized by All India Council for Technical Education(AICTE) at par with Quality Improvement Program (QIP) for recognition/credits.

The programs are conducted by well-known industry partners, researches and experts from leading academic and renowned R&D organizations. For this, the Academy has signed MoUs with Industry/ R&D partners in different domains, who collaborate and work with them in conducting the training programs. Academy also facilitates the interaction between beneficiaries and industry experts to enable collaboration and finding opportunities for parent institutions.

Sanjeev Manhas

Associate Professor IIT Roorkee

Why CloudxLab and E&ICT Academy, IIT Roorkee

Earn a certificate from E&ICT Academy, IIT Roorkee.

Online cloud lab for hands-on for real-world experience

Interact with the international community of peers via the discussion forum.

Lifetime course access.

Learn Machine learning from in-dustry experts and become expert in Machine learning domain

Work on real-world projects.

Best-in-class support throughout your learning journey.

Course Creators

Sandeep Giri

Founder at CloudxLab

Past: Amazon, InMobi, D.E.Shaw

Course Developer

Know more

Abhinav Singh

Co-Founder at CloudxLab

Past: Byjus

Course Developer

Know more

Sanjeev Manhas

Associate Professor,

IIT Roorkee

Course Advisor

Know more

R. Balasubramanian

Professor,

IIT Roorkee

Course Developer

Know more

Partha Pratim Roy

Assistant Professor,

IIT Roorkee

Course Developer

Know more

Course Curriculum

Course: 1 Python For Machine Learning

1. Introduction To Linux
2. Introduction To Python
3. Hands-on Using Jupyter On Cloudxlab
4. Overview Of Linear Algebra
5. Introduction To Numpy & Pandas

Projects

1. Analyze your mailbox

Course: 2 Course On Machine Learning

1 Introduction to Statistics

1. Statistical Inference
2. Types of Variables
3. Probability Distribution
4. Normality
5. Measures of Central Tendencies
6. Normal Distribution

2 Machine Learning Applications & Landscape

1. Introduction to Machine Learning,
2. Machine Learning Application
3. Introduction to AI
4. Different types of Machine Learning - Supervised, Unsupervised
5. Reinforcement

3 Building end-to-end Machine Learning Project

1. Machine Learning Projects Checklist
,
2. Frame the problem and look at the big picture
3. Get the data
4. Explore the data to gain insights

5. Prepare the data for Machine Learning algorithms

6. Explore many different models and short-list the best ones

7. Fine-tune model

8. Present the solution

9. Launch, monitor and maintain the system

4 Classifications

1. Training a Binary classification,

2. Performance Measures

3. Confusion Matrix

4. Precision and Recall

5. Precision/Recall Tradeoff

6. The ROC Curve

7. Multiclass Classification

8. Multilabel Classification

9. Multi-output Classification

4 Classifications

1. Linear Regression

2. Gradient Descent

3. Polynomial Regression

4. Learning Curves

5. Regularized Linear Models

6. Logistic Regression

6 Support Vector Machines

1. Linear SVM Classification

2. Nonlinear SVM Classification

3. SVM Regression

7 Decision Trees

1. Training and Visualizing a Decision Tree

2. Making Predictions

3. Estimating Class Probabilities

4. The CART Training Algorithm

5. Gini Impurity or Entropy

6. Regularization Hyperparameters

7. Regression

8. Instability

8 Ensemble Learning and Random Forests

1. Voting Classifiers

2. Bagging and Pasting

3. Random Patches and Random Subspaces

4. Random Forests

5. Boosting
Stacking

6 Dimensionality Reduction

1. The Curse of Dimensionality

2. Main Approaches for Dimensionality Reduction

3. PCA

4. Kernel PCA

5. LLE

6. Other Dimensionality Reduction Techniques

Projects

1. Predict the median housing prices in California

2. Classify handwritten digits in MNIST dataset

3. Noise removal from the images

4. Predict the class of flower in IRIS dataset

5. Predict which passengers survived in the Titanic shipwreck

6. Predict bikes rental demand

7. Build a spam classifier

Course: 3 Course On Deep Learning

1. Introduction to Deep Learning

1. Deep Learning Applications,

2. Artificial Neural Network,

3. TensorFlow Demo,

4. Deep Learning Frameworks

2 Up and Running with TensorFlow

1. Installation,

2. Creating Your First Graph and Running It in a Session,

3.Managing Graphs,

4. Lifecycle of a Node Value,

5. Linear Regression with TensorFlow,

6. Implementing Gradient Descent,

7. Feeding Data to the Training Algorithm,

8. Saving and Restoring Models,

9. Visualizing the Graph and Training Curves Using TensorBoard,

10. Name Scopes, Modularity,

11. Sharing Variables

3 Introduction to Artificial Neural Networks

1. From Biological to Artificial Neurons,

2. Training an MLP with TensorFlow's High-Level API,

3. Training a DNN Using Plain TensorFlow,

4. Fine-Tuning Neural Network Hyperparameters

4 Training Deep Neural Nets

1. Vanishing / Exploding Gradients Problems,
2. Reusing Pretrained Layers,
3. Faster Optimizers,
4. Avoiding Overfitting Through Regularization,
5. Practical Guidelines

5 Convolutional Neural Networks

1. The Architecture of the Visual Cortex,
2. Convolutional Layer,
3. Pooling Layer,
4. CNN Architectures

6 Recurrent Neural Networks

1. Recurrent Neurons,
2. Basic RNNs in TensorFlow,
3. Training RNNs,
4. Deep RNNs,
5. LSTM Cell,
6. GRU Cell,
7. Natural Language Processing

7 Autoencoders

1. Efficient Data Representations,
2. Performing PCA with an Undercomplete Linear Autoencoder,
3. Stacked Autoencoders,
4. Unsupervised Pretraining Using Stacked Autoencoders,
5. Denoising Autoencoders,
6. Sparse Autoencoders,
7. Variational Autoencoders

8 Reinforcement Learning

1. Learning to Optimize Rewards,
2. Policy Search,
3. Introduction to OpenAI Gym,
4. Neural Network Policies,
5. Evaluating Actions: The Credit Assignment Problem,
6. Policy Gradients,
7. Markov Decision Processes,
8. Temporal Difference Learning and Q-Learning,
9. Learning to Play Ms. Pac-Man Using Deep Q-Learning

Projects

1. Build cats classifier
   using neural network

2. Classify large images
   using Inception v3

3. Classify clothes
   using TensorFlow

   A) Predict the hourly rain
      gauge total

Course Details and Fees

Please find more information about the course and fees here:
https://cloudxlab.com/course/71/machine-learning-specialization-eict-iitr

Mode of Learning

Online Self-paced Learning

Our Esteemed Customers

For Further Details

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