EDUXLABS
edu's Xpert (Esoir Solution)

4-WEEKS ONLINE LIVE

FDP | Internship Training | Industrial Training

on

AI, MACHINE LEARNING, DEEP LEARNING, COMPUTER VISION, NLP & CHAT GPT

Training Duration:

Duration	Training Hours per day	Total Training Hours
4-Weeks	3-hours (Mon-Friday)	60 Hours
2-Weeks	3-hours (Mon-Friday)	30 Hours

Training Highlights:

14+ AI Projects
will be covered during the training.

Total 60+ Hours (4-weeks)
online Live Training.

Training includes: Assignments, Projects with Code, Training PPT's & Recording.

The certificate of completion will be provided to each participant by Eduxlabs in asscoaition with Mechanica IIT Madras

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CERTIFICATIONS:

We offer following type of training certificates

- 2/4 Weeks Training **Completion** Certificate from Eduxlabs in association with Mechanica IIT-M
- 2/4 Weeks **FDP** Certificate of Completion from Eduxlabs association with Mechanica IIT-M
- 2/4 Weeks **Industrial** Certificate of Completion from Eduxlabs association with Mechanica IIT-M
- 4/6 Weeks **Internship** Completion Letter from Eduxlabs (Only for Internship Participants)

2 / 4-WEEKS TRAINING PROGRAM:

4-WEEKS	MODULE	HOURS
1ST-WEEK	• Python Programming from scratch • Data Processing using Python • Data Science fundamental	15-HRS
2ND-WEEK	• Data Analysis using Python • Data Visualisation using Python • Machine Learning Foundation	15-HRS
3RD- WEEK	• Machine Learning Intermediate • Machine Learning Advance • Deep Learning Foundation • Deep Learning Advanced	15-HRS
4TH - WEEK	• Computer Vision • Natural language processing (NLP) • Chat Bots • Time Series • Recommendation Systems	15-HRS

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4-WEEKS TRAINING PROJECTS(13+)

MACHINE LEARNING PROJECTS	**Project 1:** House price prediction using Linear Regression **Project 2:** Diabetics prediction **Project 3:** Customer churn prediction using Decision tree & Random Forest
ARTIFICIAL INTELLIGENCE + DEEP LEARNING PROJECTS	**Project 1:** Bike Sharing Predication of bike rental count hourly or daily based on the environmental and seasonal settings. **Project 2:** Time Series Forecasting (LSTM) and Prediction Curve-Global **Project 3:** ECG Heart Beat Analysis, Visualization and Heart Beat Classification using ANN Classification **Project 4:** Classification of Devanagari Handwritten Characters Classify handwritten Devanagari characters using Neural Network.
COMPUTER VISION PROJECTS + DEEP LEARNING PROJECTS	**Project 1:** Face and Eye Detection – Using Haar Cascade and Cascade Classifier **Project 2:** Face Recognition using Computer Vision and Deep Learning **Project 3:** Time Series on Flights Passengers Forecasting. **Project 4:** Product Recommendation System
NLP PROJECT + CHABOT PROJECT	**Project 1:** Amazon Product Reviews Sentiment Analysis **Project 2:** Zomato Restaurant Reviews Sentiment Analysis using LSTM Algorithm **Project 3:** Conventional Chatbot using Open AI, GPT. (Built your ChatBot with OpenAI GPT3)

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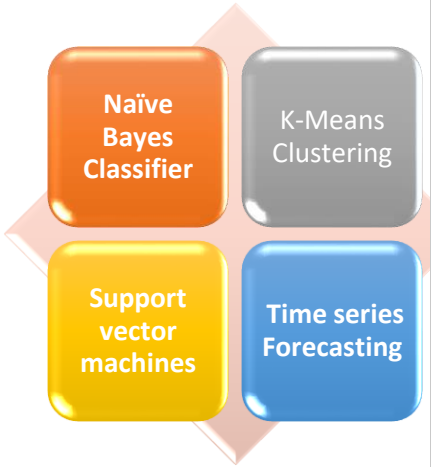
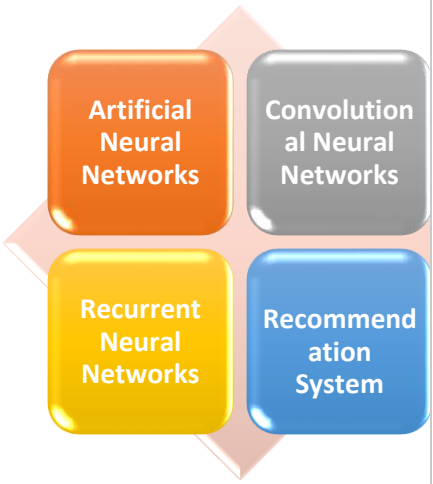
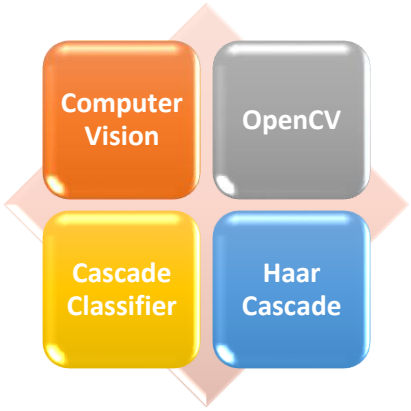
4-WEEKS COURSE CONTENT
ON
AI & Machine Learning, Deep Learning, Computer Vision, NLP & Chabot

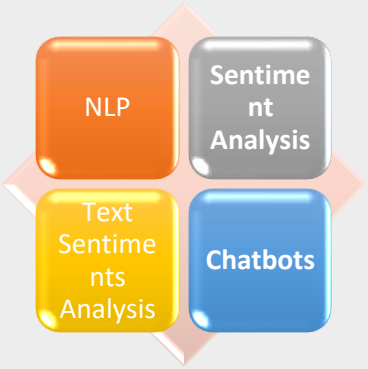
4-Weeks	MODULES
1st – Week **Data Analysis Fundamentals with Python**  	**Module 1: Data Science Fundamentals** • Introduction to Data Science • Introduction to Machine Learning • Artificial Intelligence vs Machine Learning • Benefits of Machine Learning w.r.t. traditional methodologies • Deep Learning - Introduction • How DL is different from all other Machine Learning methods • Supervised and Unsupervised learning • Reinforcement Learning • AI Training & testing flow • Classification and Regression in Supervised Learning • Clustering and Association in Unsupervised Learning • Types of Algorithms • Data Science Flow & Essentials **Module 2: Python Fundamentals [CORE]** • Overview of Python- Starting with Python • Python data types: Primitive • Core built-in data structures – Lists, Tuples, Dictionaries • String, String built-in methods • Data manipulation tools (Operators, Functions, Packages, control structures, Loops, arrays etc) • Loops and Conditional statements • Python UDFs – def keywords • Reading and writing files **Module 3: Data Manipulation With PANDAS** • Concept of Packages/Libraries - Important packages (NumPy, SciPy, Pandas) • Importing Data from various sources (CSV, txt, excel, access etc) • Exporting Data to various formats • Data Manipulation steps (Sorting, filtering, duplicates, merging, appending, sub setting, derived variables, sampling, Data type conversions, renaming, formatting etc) • Scaling and Normalizing data • Pre-processing and Feature Selection.
Data Visualization & EDA	**Module 1: Data Visualization** • Seaborn • Matplotlib

	• Time series Plot of Covid19 Data • Coronavirus 2019-20 Visualization on World Map **Module 2: IMPLEMENTATION OF STATS METHODS** • Basic Statistics - Measures of Central Tendencies and Variance • Building blocks - Probability Distributions - Normal distribution • Central Tendency, Standard Deviation • Quartiles, IQR, Boxplot, Outliers • Skewness, Kurtosis
2nd – Week **MACHINE LEARNING FOUNDATION REGRESSION** 	**Module 1: LINEAR REGRESSION** • Regression Problem Analysis • Mathematical modelling of Regression Model • L1 & L2 Regularization • Cost Function • Optimizers - Gradient Descent Algorithm • Parameters & Hyperparameters • Cost Function & Cost Optimizer: Gradient Descent Algorithm • R Squared & Adj. Squared • Univariate Linear Regression Model • Polynomial Linear Regression • Multivariate Regression Model • Model Predictions, Model Accuracy, Graphical Plotting **Module 2: LOGISTIC REGRESSION** • Assumptions • Logit Transformation • Hypothesis – Sigmoid Equation, Logistic Equation • Odds Ratio and Interpretation • Model Specification • Prediction Probability • Model Parameter Significance Evaluation • Model Optimization of threshold value • Confusion Matrix, Precision, Recall, F1-Score, ROC Curve, Classification report **Module 3: DECISION TREE & RANDOM FOREST ALGORITHM** • Concept and Working Principle • Mathematical Modelling • Optimization Function Formation • Analysis of Classification Problem case • Math: Role of Entropy, Gini Index and Information Gain in Decision Trees • Decision Trees – ID3 • Overfitting and Pruning • Plotting Tree • Random Forest **Module 4: KNN (K- Nearest Neighbours)** • K- Nearest Network – Introduction • How does the KNN algorithm work? • Methods of calculating distance between points • Methods to choose the K

	• GridSearchCV
3rd – Week: **MACHINE LEARNING INTERMEDIATE**  	**Module 1: Dimensionality Reduction using PCA** **Module 2: Naïve Bayes Classifier** • Bayesian Classification • How Naive Bayes algorithm works? • Naive Bayes Application – Binary Class & Multi-Class Classification • Gaussian Naive Bayes • Multinomial Naive Bayes **Module 3: CLUSTERING – K-MEANS and Hierarchical** • Unsupervised Learning • Clustering Introduction • K-Means Clustering • Handling K-Means Clustering • Maths behind KMeans Clustering – Centroids • Mean shift Introduction • Elbow Method – Picking K in K-Means • Hierarchical Clustering • Types – Agglomerative and Divisive • Dendrogram **Module 4: Support vector machines (S V M)** • Concept and Working Principle • Mathematical Modelling • Linear Support Vector Machine • Hyperplanes • Optimal separating hyperplane • Drawing Margins • Optimization Function Formation • The Kernel Method and Nonlinear Hyperplanes **Module 5: Time series Forecasting** • Time Series - Introduction • Techniques and applications • Components of Time Series Forecasting • Moving average, Smoothing • ARIMA Model • Seasonality in Time Series • Prophet Model
MACHINE LEARNING ADVANCE	**Module 1: Recommendation System** • Association Rule Learning • Components of Apriori algorithm: Support, Confidence, Lift • Market Basket Analysis • Collaborative Filtering **Module 2. Advanced Ensemble Learning** • Random Forest

	• Bagging • Boosting • Adaboost • XGboost
Artificial Intelligence Foundation 	**Module 1: Artificial Neural Networks** • MP Neuron • Perceptron • Logic gates • ANN & Working • Single Layer Perceptron Model • Multilayer Neural Network • Feed Forward Neural Network • Cost Function Formation • Activation Function • Cost Function • Applying Gradient Descent Algorithm • Stochastic Gradient Descent • XOR Logic using MLP **Module 2: TensorFlow** • TensorFlow library for AI • Keras – High Level TensorFlow API • Getting started with TensorFlow • Installation & Setting up TensorFlow • TensorFlow Data Structures • Tensor board – Visualization **Module 3: Regression with ANN** • Learning Algorithm • Linear Regression – Theory • Feature selection - Correlation • Input Matrix & Output Labels • Activation Function • Training A single perceptron • Model Optimizers - Parameters and Hyperparameters • Multiple Linear Regression **Module 4: Classification with ANN** • Logistic Regression – Theory • Classification Problems • Training the model • Binary Class and Multi-Class Classification • Hypothesis, Parameters & Hyperparameters, Cost Function, Model Optimization – Optimizers • Activation Function
4th – Week **Deep Learning**	**Module 1: CNNs (Convolutional Neural Networks)** • Convolutional Neural Network • Understanding the architecture and use-cases of CNN • Pooling Layer • How to visualize using CNN

	• How to fine-tune a convolutional neural network • What is transfer learning • Kernel filter, Feature maps, and pooling • Deploying convolutional neural networks in TensorFlow **Module 2: RNNs (Recurrent Neural Networks)** • Introduction to the RNN model • Modelling sequences • Unfolded RNN • Types of RNN & Use Case • Training RNNs with back propagation • Backward Propagation • Problems in Traditional RNN • Long short-term memory (LSTM) • Forget Gate, Input Gate, Output Gate **Module 3: Recommendation System** • Boltzmann Machine • Restricted Boltzmann Machine (RBM) • Unsupervised Learning • Collaborative Filtering
COMPUTER VISION 	**Module 1: Introduction to OpenCV** • Introduction to OpenCV • Image Processing • Working & implementation with Image • Edge Detection & smoothing of image • Working with resolution • Colour filtering on Image • Image Contour • Feature Extraction • Reading Video using Computer Vision • Implementation of color filter on video • Modifying Video resolution • OpenCV gradients **Module 2: Cascade Classifier and HaarCascade** • Cascade Classifiers • Haar Cascades • Detect Multiscale • Frontal Face & Eye Detection using CV2 (Computer Vision) and Haar Cascade **Module 3: Computer Vision using CNN** • Image Components • Collecting Samples and Image Data Preparation (RGB Image) • ML Model using Open Vision • Applying Transfer Learning – Dense Net
NLP-I	**Module 1: Introduction to NLP & Word Vectors** • NLP • NLTK Package

	• Tokenization • Lemmatization and Stemming • Stop Words • Regex • Bag-of-Words • TF-IDF **Module 2: NLP - Sentiment Analysis** • NLP Text Analysis • Frequency Distribution • Text Sentiments Analysis
NLP-II	**Module 1: Neural Machine Translation (NMT)** • Translating English sentences to Spanish sentences using Neural Networks Auto Encoder • Translation from English to Spanish using encoder-decoder model
Chatbots and OpenAI	**Module 1: Chatbots** • Chatbot Introduction • Chatbot Flow and Architecture • OpenAI Introduction • GPT3 • Built your ChatBot with OpenAI GPT3

Participant Eligibility & Prerequisite:

- The program is open to the Faculty/ Research Scholars/ Students of science & Engineering institutes and working IT professionals are also, eligible.
- There are no prerequisites for this training, you will learn AI from scratch.

Training Fee:

2-weeks Training Fee: ₹ 3000/-only
4-weeks Training Fee: ₹ 4999/-only

Register Now: https://www.eduxlabs.com/machinelearning

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