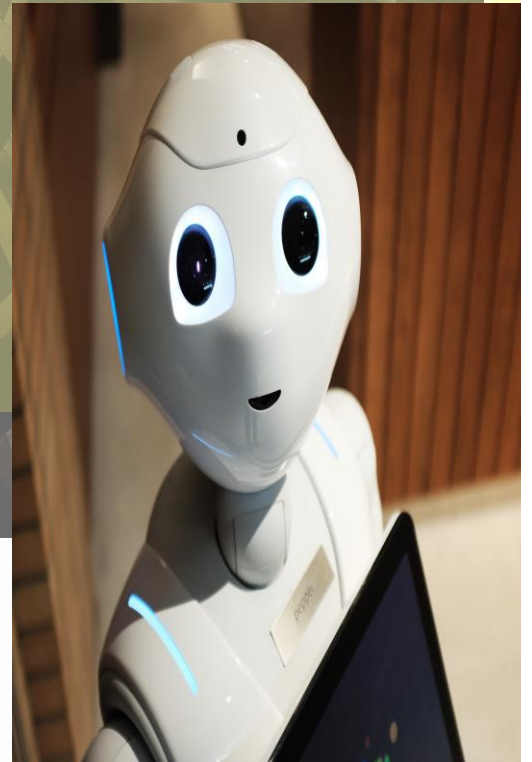
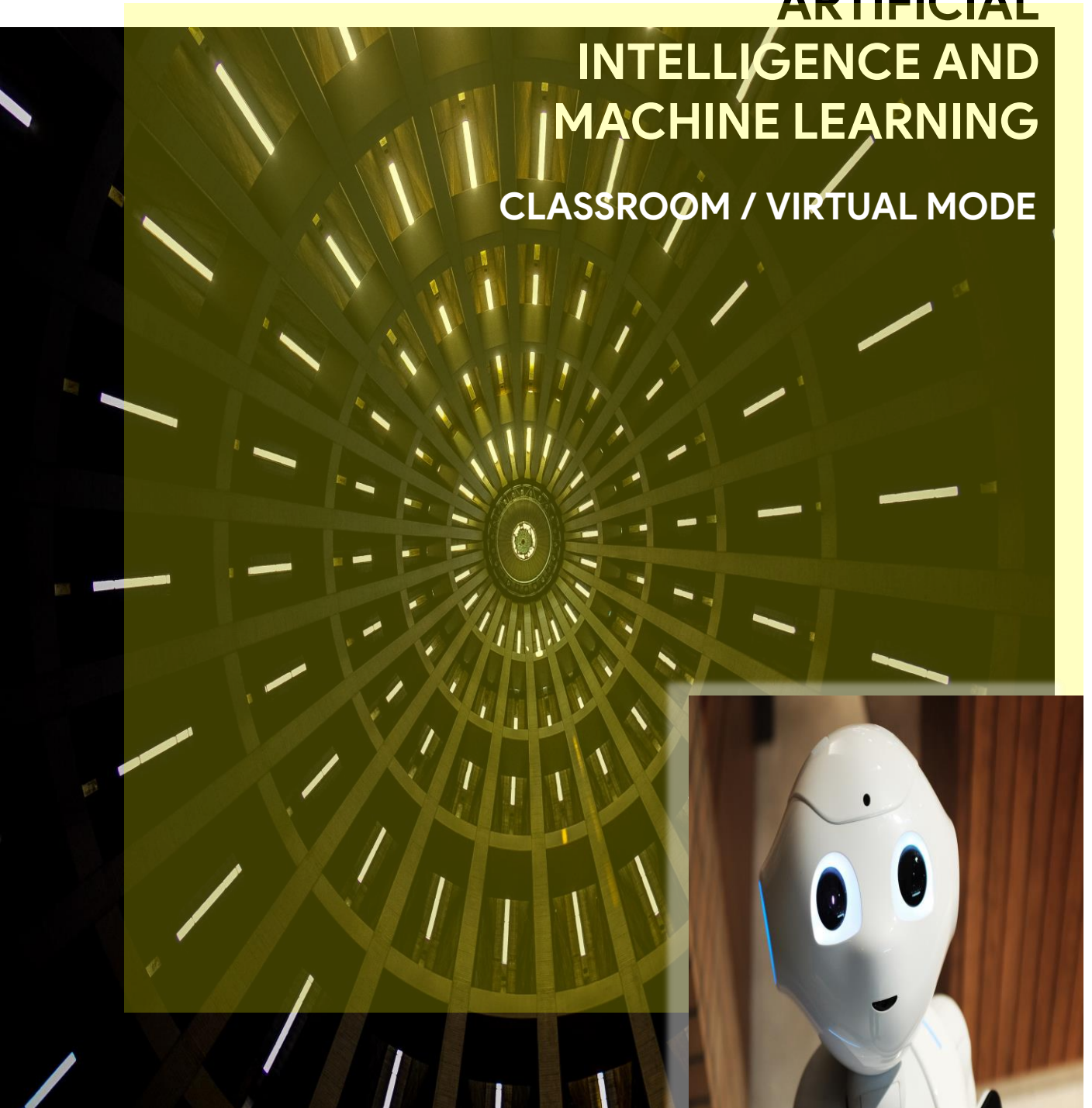


# POST GRADUATE PROGRAM IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

CLASSROOM / VIRTUAL MODE





# ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is the big thing in the technology field and a large number of organizations are implementing AI and the demand for professionals in AI is growing at an amazing speed. Artificial Intelligence (AI) course will provide a wide understanding of the concepts of Artificial Intelligence (AI) to make computer programs to solve problems and achieve goals in the world.

Artificial Intelligence (AI) makes computers to perform tasks such as speech recognition, decision-making and visual perception which normally requires human intelligence that aims to develop intelligent machines.

The basic grounding in the practices in AI is likely to become valuable in the field of business, and profession. This course is intended to cover the concepts of Artificial Intelligence (AI) from the basics to advanced implementation.



## **What are the course objectives?**

Artificial Intelligence (AI) is becoming smarter day by day in all business functions to elevate performances. AI is used widely in gaming, media, finance, robotics, quantum science, autonomous vehicles, and medical diagnosis. AI technology is a crucial prerequisite of much of the digital transformation taking place today as organizations position themselves to capitalize on the ever-growing amount of data being generated and collected.

To build a successful career in Artificial Intelligence (AI), this course is intended to give a complete understanding of Artificial Intelligence concepts. This course offers you get practical, hands-on experience to ensure hassle-free execution of real-life projects. This AI course leverages world-class industry expertise in making you professional data science experts.



## **What skills will you learn?**

In this Artificial Intelligence (AI) course, you will be able to

- Understand the basics of AI and how these technologies are re-defining the AI industry
- Learn the key terminology used in AI space
- Learn major applications of AI through use cases

## **Who should take this course?**

Artificial Intelligence (AI) gives you the basic knowledge of Artificial Intelligence. **This course doesn't need any programming skills and best suited for:**

- Well-suited for management and non-technical participants
- Students who want to learn Artificial Intelligence
- Newbies who are not familiar with AI or its implications





# Things You Will Learn

## Introduction To Machine Learning

- Basic Concept
- Train, Test & Validation Distribution;
- ML Strategy;
- Computation Graph
- Evaluation Metric; Human Level Performance

## Machine Learning

- ML Supervised
- Linear Regression
- Logistic Regression
- Gradient Descent
- Decision Tree
- Random Forest
- Bagging & Boosting
- KNN
- ML Unsupervised
- K-Means
- hierarchical Clustering

## Python Programming

- **Basic Statistics:** Sampling & Sampling Statistics
- Hypothesis Testing
- Calculus: Derivatives
- Optimization;
- **Linear Algebra:** Function
- Scalar-Vector-Matrix
- Vector Operation
- **Probability:** Space
- Probability
- Distribution

## Intro To Neural Network & Deep Learning

- Introduction: Deep Learning Importance [Strength & Limitation] SP | MLP
- Feed Forward & Backward Propagation Neural Network Overview; Neural Network Representation
- Activation Function
- Loss Function
- Importance of Non-linear Activation Function
- Gradient Descent for Neural Network

## Parameter & Hyperparameter

- **Practical Aspect:** Train, Test & Validation Set; Vanishing & Exploding Gradient
- Dropout; Regularization
- Optimization: Bias Correction
- RMS Prop
- Adam, Ada, AdaBoost
- Learning Rate
- Tuning
- Softmax

## Data Processing

- **Environment:** Scikit Learn
- NLTK
- Spacy & Gensim
- OpenCV: Tensorflow
- Keras
- **Text Processing:** Representation



# Things You Will Learn

- Text Processing: Representation
- Data Cleaning
- Data Preprocessing Similarity
- **Image Processing:** Image
- Image Transformation
- Filters
- Noise Removal
- Correlation & Convolution
- Edge Detection
- Non Maximum Suppression & Hysteresis
- Fourier Domain
- Video Processing
- **Speech Data Analytics:** Feature Extraction
- Image Feature
- Descriptors
- Object Detection
- Detection & Classification

## CNN

- Computer Vision
- Padding
- Convolution
- Pooling; Why Convolution
- **Deep Convolution Model:** Case Studies
- Classic Networks
- Inception
- Open Source Implementation
- Transfer Learning
- **Detection Algorithm:** Object Localization
- Landmark Detection
- Object Detection
- Bounding Box Prediction
- Yolo
- **Face Recognition:** What is Face Recognition
- One Shot Learning
- Siamese Network

- Triplet Loss
- Face Verification
- Neural Style Transfer
- Deep Conv Net Learning

## RNN

- Why Sequence Model
- RNN Model
- Back propagation through time
- Different Type of RNNs
- GRU
- LSTM
- Bidirectional LSTM
- Deep RNN
- Word Embedding
- Debiasing;
- Negative Sampling
- Elmo & Bert
- Beam Search
- Attention Model

## Generative Adversial Network

- Autoencoders & Decoders
- Adversial Network
- Active Learning
- Reinforcement Learning
- Q Learning; Exploration & Exploitation

## Assignments

- **Introduction to Machine Learning:** Business Case evaluation
- Data requirements and collection
- Evaluation metrics
- **Machine Learning:** Profit of 50\_startups data prediction



# Things You Will Learn

- Extra marital affair prediction;
  - Fraud data analytics
  - Fabric sales analysis
  - Classification of animals data
  - Crime data analysis using clustering method; and airlines data to obtain optimum number of clusters
  - **Python Programming:** Resource Information Analysis; Text Cleaning of Customer reviews using NLP; Image Manipulation (Loading, Rotation etc.)
  - **Mathematics Foundation:** Sampling & Sampling Statistics
  - Hypothesis Testing; Calculus Problems
  - Linear Algebra Problems
  - Probability Problems
  - **Intro to Neural Network & Deep Learning:** Parameter & Hyperparameter
  - Risk Evaluation
  - Prediction of claim amount; motor temp prediction
  - User Behavioral Pattern; (2 ANN assignments+ 2 Parameter and hyperparameters)
  - **Data Processing:** User review data load and familiarity with data and environment;
  - E commerce Product Similarity
  - Sentiment classification of movie reviews
  - Emotion Mining of user reviews
  - Vehicle edge detection
  - Cleaning of hand-written digits data
  - Image data Augmentation
  - Facial feature detection
  - Image data wrangling for classification
  - Video Analysis of a short film
  - Speech data Analysis w.r.t emotion
  - **CNN:** Ecommerce product image classification; Disease prediction based on images; (2 CNN algorithms):
  - Vehicle identification(Object Detection)
  - Animal Classification(Object Classification)
  - Spatial Image classification (Image segmentation)
  - Face detection
  - Face recognition (Attendance using facial recognition)
  - **RNN:** Next word prediction (Vanilla RNN)
  - Twitter data analysis using Named Entity Recognition(NER)
  - Retail data - Word2vec
  - NER and Forecasting of Oil price prediction
  - Auto text composer (NER language model);
  - Q and A Chatbot
  - Real life voice Recognition
  - **Generative:** Machine Translation
  - New Image generation based on existing images
  - Reinforcement Learning; Game Intelligence
- ## Projects
- Chatbot project: Build end to end chatbot right from data storage schema to final output for a domain
  - Emotion Analytics: Identifying and analyzing the full spectrum of human emotions including mood, attitude and emotional personality;
  - Object Detection: Detection of objects in images
  - Face detection from CC camera feed: Analysis of video feed from CC cameras
- ## Duration: 330 Hrs



## ABOUT US

ExcelR is a global leader delivering a wide gamut of management, consulting and trending technical training over 40 countries. We are a trusted training delivery partner of 350+ corporate clients and universities across the globe with 140,000+ professionals trained across various courses.

Our digital marketing training curriculum, which is the reflection of our tried and true methodologies, will inspire aspirant to learn “how to” attract high quality traffic to the website through the content that's valuable to target audience.



"Be yourself, everyone else is already taken."

— Oscar Wilde

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Transforming the skill landscape

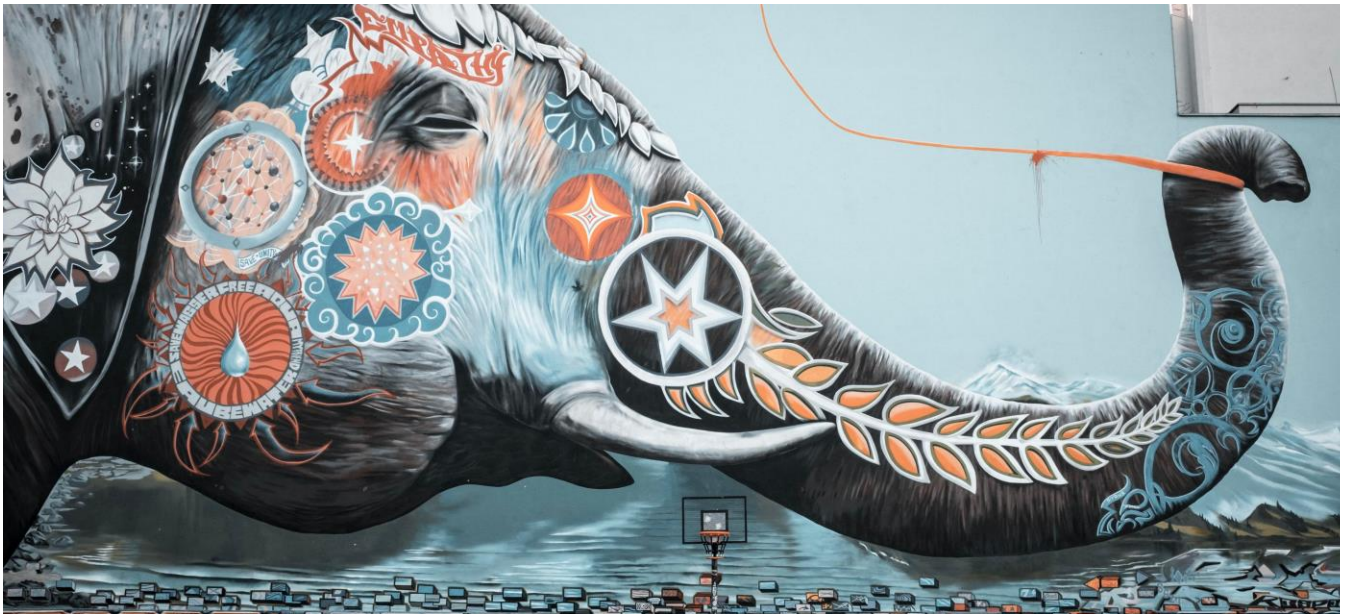
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[www.excelr.com](http://www.excelr.com)

+91 9632156744  
1800-212-2120