

TechLeap Academy



TECHLEAP ACADEMY

UNLOCK YOUR INTELLECTUAL GRACE

ADVANCED CERTIFICATION PROGRAM IN

# ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Powered by: **IBM**

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# About us:

TechLeap Academy is an EdTech Platform, offers a diverse range of programs designed to match your ambitions and career goals. Whether you're just starting your journey in technology or looking to upskill, our carefully curated courses provide the perfect blend of theory and hands-on experience.

From software development and web technologies to digital marketing, data analytics, and emerging tools, our programs are built with industry demand in mind. Each course is led by experienced mentors who guide you through real-world projects, ensuring you gain the confidence and expertise to succeed.

## Program Overview

### Phase-1 (Application & Onboarding)

1.----- Application Submission-----2.----- Application Submission

### Phase-2 (Journey Begin)

1.----- Basic Quiz-----2.-----Self Analysis Drill



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## Phase-3 (Let's start mentorship)

- 1.-----Data Science & Analytics (Basic to advance)
- 2.-----LIVE sessions + weekly challenges.
- 3.-----Guidance of Industry Mentor

## Phase-4 (Ready to join the industry)

- 1.----- Live Projects-----
- 2.-----Phase Test-----
- 3.-----Internship Opportunities-----
- 4.-----Career Assistance Session-----
- 5.-----Mock Interviews



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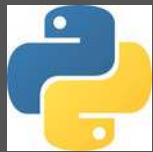
# IBM Certification

1. -----3+ Industrial Expert Guest Sessions
2. -----IBM Certification
3. -----3+ Advanced Projects

# Tools & skills learnt



Tableau & Excel



Python

Scikit-learn, Pandas, TensorFlow

Streamlit & Flask



SQL

Data Analysis & Visualization

Machine Learning & Deep Learning:  
NLP & Neural Networks

CI/CD & GitHub Actions

# Job Opportunities

Machine Learning Engineer  
(₹6-9 lakhs per annum)

AI Research Scientist  
(₹8-12 lakhs per annum)

Natural Language Processing  
(₹6-9 lakhs per annum)

Deep Learning Engineer  
(₹7-10 lakhs per annum)

Data Scientist  
(₹6-9 lakhs per annum)

AI/ML Software Engineer  
(₹6-9 lakhs per annum)

Computer Vision Engineer  
(₹7-10 lakhs per annum)

AI Solutions Architect  
(₹10-15 lakhs per annum)

# Curriculum



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**Week 1:** Introduction to AI & ML • Evolution of AI & ML • AI vs ML vs DL vs Data Science • Applications in real-world (healthcare, finance, robotics, NLP) • Setting up Python ML environment (Jupyter, NumPy, Pandas, Matplotlib, Scikit-learn) • Lab: First ML project – Predicting house prices (Linear Regression basics).

**Week 2:** Mathematics for ML • Linear Algebra (vectors, matrices, eigenvalues, eigenvectors) • Probability & Statistics basics (mean, variance, distributions, Bayes theorem) • Gradient & optimization basics • Lab: Hands-on with NumPy & Matplotlib for ML math.

**Week 3:** Data Preprocessing & Feature Engineering • Data cleaning, handling missing values, outliers • Feature scaling (Normalization, Standardization) • Encoding categorical data (One-hot, Label Encoding) • Feature selection & dimensionality reduction (PCA, LDA) • Lab: Preprocessing dataset for classification .



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**Week 4:** Supervised Learning – Regression • Simple & Multiple Linear Regression • Polynomial Regression • Regularization (Ridge, Lasso, ElasticNet) • Evaluation metrics (MSE, RMSE,  $R^2$ ) • Lab: Predicting salaries using regression models.

**Week 5:** Supervised Learning – Classification • Logistic Regression • k-Nearest Neighbors (k-NN) • Decision Trees & Random Forests • Evaluation metrics (Confusion Matrix, Precision, Recall, F1-score) • Lab: Spam email classifier using ML.

**Week 6:** Support Vector Machines (SVM) • SVM intuition and hyperplanes • Kernel methods (Linear, Polynomial, RBF) • Soft margin vs hard margin classifiers • Lab: Handwritten digit recognition with SVM.

**Week 7:** Naïve Bayes & Ensemble Learning • Naïve Bayes classifier (Gaussian, Multinomial, Bernoulli) • Ensemble methods (Bagging, Boosting, AdaBoost, XGBoost) • Lab: Sentiment analysis using Naïve Bayes & XGBoost.

**Week 8:** Unsupervised Learning – Clustering • k-Means clustering • Hierarchical clustering • DBSCAN • Cluster evaluation metrics • Lab: Customer segmentation using clustering.

**Week 9:** Unsupervised Learning – Dimensionality Reduction • PCA (Principal Component Analysis) • LDA (Linear Discriminant Analysis) • t-SNE & UMAP for visualization • Lab: Visualizing high-dimensional datasets.

**Week 10:** Neural Networks & Deep Learning (DL) • Basics of Perceptron & Neural Networks • Activation functions (Sigmoid, ReLU, Softmax) • Forward & Backpropagation • Lab: Building a neural network from scratch (NumPy).

**Week 11:** Deep Learning with TensorFlow & PyTorch • Introduction to TensorFlow & PyTorch • Building ANN models for classification & regression • Model training, validation, and testing • Lab: Fashion MNIST classification with DL.

**Week 12:** Convolutional Neural Networks (CNNs) • CNN architecture (Convolution, Pooling, Flatten, Dense layers) • Applications in image recognition & computer vision • Lab: Image classification using CNNs (CIFAR-10 dataset)

**Week 13:** Natural Language Processing (NLP) • Text preprocessing (tokenization, stemming, lemmatization, stopwords) • Bag of Words (BoW), TF-IDF • Word Embeddings (Word2Vec, GloVe) • Lab: Sentiment analysis with NLP.

**Week 14:** Recurrent Neural Networks (RNNs) & LSTMs • RNN architecture and applications • Vanishing gradient problem & LSTM solution • Applications in sequence modeling (text, time series) • Lab: Text generation with RNN/LSTM.

**Week 15:** Reinforcement Learning (RL) • Introduction to RL (Agent, Environment, Reward, Policy) • Q-Learning basics • Deep Q-Networks (DQN) • Applications in robotics, gaming, self-driving cars • Lab: Training an agent in OpenAI Gym



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**Week 16** – Capstone Project & Review • Students work on real-world AI/ML project: Predictive Analytics, Image Classification, NLP Chatbot, Recommendation Systems • Final project presentations & evaluations.

# Recruitment Partners



# Code of Conduct

**Program Structure:** Skill Development Track: We will focus on enhancing skills and knowledge with LIVE sessions from industry mentors.

**Certification:** Successful completion of the program, including assessments, projects, and attendance, will lead to gaining Completion Certificate and Project Certificate. Internship Certificate will be provided by the company you'll be interning with, if any. Career Track **(Early Career Opportunities):** We will provide opportunities for early career development through internships.

**Code of Conduct Class Schedule and Attendance:** Regular Classes: Classes will be held two times a week on a consistent schedule. Evening Time Slots: Class timings will be in the evening slot between 6:30 PM - 10:00 PM, and each session will last approximately 1-1.5 hours.

**Mandatory Attendance:** A minimum of 70% attendance in live classes is required. Certification Criteria: Certifications will only be issued to students who maintain the required attendance.

## Contact Us

### **Course starts:**

Classes from first week of the month

### **Program hours:**

50+ learning hours

4+ Industrial Projects



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**For admissions, contact:**

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