



3GIRPS
INSTITUTE OF RESEARCH & POLICY STUDIES
BUILD INDIA TO SERVE THE WORLD

**3G INSTITUTE OF RESEARCH AND POLICY STUDIES
PRESENTS**

**90+ HOURS
MACHINE LEARNING**

Venue: IIT Madras Research Park
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ML CURRICULUM

1. Module 1 – Foundations (10 hrs)

1.1. Python

- 1.1.1. Overview of python
- 1.1.2. Basics of python
- 1.1.3. Python datastructure
- 1.1.4. Python libraries for AI & ML
 - 1.1.4.1. Numpy – Statistical Analysis
 - 1.1.4.2. Pandas –
 - 1.1.4.3. Matplotlib – Data visualisation
- 1.1.5. Debugging methodology
- 1.1.6. Hands on sessions
- 1.1.7. Milestone project

1.2. Statistics

- 1.2.1. Probability
- 1.2.2. Basic statistics
- 1.2.3. Terminology in statistics
- 1.2.4. Distributions
- 1.2.5. Statistical theorems
 - 1.2.5.1. Central Limit theorem
 - 1.2.5.2. Baye's theorem
- 1.2.6. Descriptive analysis and descriptive statistics
- 1.3. Inferential analysis and Inferential statistics
- 1.4. Statistical Significance
- 1.5. Hypothesis testing
- 1.6. Bias – Variance trade-off

1.7. Pre-set up:

- 1.7.1. System requirements
- 1.7.2. Installations
- 1.7.3. Environment setup

2. Module 2 (25 hrs)

2.1. Machine Learning

- 2.1.1. Introduction to Machine Learning
- 2.1.2. Analytics and its types
- 2.1.3. Machine Learning and its types

2.2. Supervised Learning

- 2.2.1. Basic concepts
- 2.2.2. Simple Linear regression
- 2.2.3. Multiple Linear regression
- 2.2.4. Logistic regression
- 2.2.5. KNN
- 2.2.6. Naive Bayes Classifier
- 2.2.7. Decision Tree
- 2.2.8. Random Forest
- 2.2.9. SVM-Support Vector Machine
- 2.2.10. Milestone project

3. Module 3 (10 hrs)

3.1. Ensemble Technique

- 3.1.1. Ensemble learning – basics
- 3.1.2. Boosting
- 3.1.3. Stacking
- 3.1.4. Decision Tree
- 3.1.5. Random Forest
- 3.1.6. Milestone project

4. Module 4 (10 hrs)

4.1. Feature Engineering

- 4.1.1. Model selection and tuning
- 4.1.2. Feature extraction
- 4.1.3. Error metrics and evaluation
- 4.1.4. Milestone project

5. Module 5 (10 hrs)

5.1. Unsupervised learning

- 5.1.1. Basic concepts
- 5.1.2. K-Means
- 5.1.3. K-means ++
- 5.1.4. Hierarchical cluster
- 5.1.5. Principal Component Analysis
- 5.1.6. Milestone project

6. Module 6(20 hrs)

6.1. Deep Learning

- 6.1.1. Neural Networks
- 6.1.2. Convolution Neural Networks
- 6.1.3. Recurrent Neural networks
- 6.1.4. LSTM
- 6.1.5. Deep Learning applications
- 6.1.6. Deep learning frameworks
 - 6.1.6.1. TensorFlow
 - 6.1.6.2. Keras
- 6.1.7. Milestone project

7. Module 7(10 hrs)

7.1. NLP – Natural Language Processing

- 7.1.1. Data pre-processing
- 7.1.2. Information retrieval
- 7.1.3. Topic modelling
- 7.1.4. Bag of words
- 7.1.5. TF-IDF
- 7.1.6. Word-embeddings
- 7.1.7. Text classification and Sentiment analysis
- 7.1.8. NLP applications
- 7.1.9. Milestone project

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Course Offered

- Internship
- Google AI
- Python
- Ethical Hacking
- Machine Learning - Deep Learning Workshop

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