Easiest way to become a DATA SCIENTIST
Why AI?

AI, ML and DS are the technologies of this century

Most of the job creation in the next 10 years will be in AI

Jobs in AI are some of the highest-paid jobs.

AI is inter-disciplinary and future-secure
Essential skills for a career in AI

- Data analysis skills
- Python programming skills
- Machine learning skills
- Communication skills
- Work experience and certification
# Roles

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<tr>
<th>Analyst</th>
<th>Data Scientist</th>
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<td><strong>Storytelling</strong></td>
<td>Build custom visualizations</td>
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<td>Define KPIs</td>
<td>Author academic papers</td>
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<td>Build reports &amp; dashboards</td>
<td>Explain model behavior</td>
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<td>Lead business reviews</td>
<td><strong>Data Wrangling</strong></td>
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<td>Deep business understanding</td>
<td>Manage telemetry/instrumentation</td>
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<td><strong>Data Wrangling</strong></td>
<td><strong>Analytics &amp; Modeling</strong></td>
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<td>Manage website tagging</td>
<td>Manage cleansing data</td>
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<td>Define custom parameters</td>
<td>Data integration/joining</td>
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<td>Work with schematized data</td>
<td>Data enrichment &amp; transformation</td>
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<td>Automate data processes</td>
<td><strong>Build &amp; run experiments</strong></td>
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<td><strong>Descriptive analysis</strong></td>
<td>Establish causality</td>
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<td>Build KPIs &amp; metrics</td>
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<td>Customer segmentation</td>
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<td>Insights &amp; recommendations</td>
<td>Build predictive models</td>
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<td>Deploy &amp; manage models</td>
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<td>Reinforcement Learning</td>
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Data Analysis Skills

Data is the fuel for AI, Machine Learning and Deep Learning and all hiring managers expects their recruits to have extensive data analysis, cleaning, and manipulation skills. Basic understanding of statistics and database principles and basic familiarity with SQL are expected.
Python Programming Skills

Python is the most common programming language in AI, Machine Learning and Deep Learning and mastering it gives one a significant advantage over the competition.

One can master python by building diverse models and extensive fine-tuning of them.
Machine Learning and Deep Learning

All hiring managers expects a data scientist to have practical experience in all major machine learning algorithms: Logistic Regression, Linear Regression, Naive-Bayes Classification, Random Forest, KNN, ADA Boost, XGBoost etc. Good understanding of CNNs and Computer vision is also a must as most of the current projects in the industry need these newer technologies.
Instructor: Prof. Venkat Raju

Profile
Lead Data Scientist with 9+ years experience in Data Science, ML, DL and NLP. Overall 20+ experience in IT with several Fortune 500 companies. Served as a Professor in Computer Science Department for two years.

Education
B. Tech (ECE): NITC, 1989
M.S.(VLSI): University of Texas, 1994
M.S. (CS): University of Texas, 1996

Certifications
IBM Data Science Professional Certification
Effective Program Management Certification, Intel, USA
Software Quality and CMMi Certification, Carnegie Mellon University, USA

Training Expertise
Trained over 10,000 learners in the last 20+ years on CAD/CAM, Big Data, AI, Data Science, ML, DL & NLP.

Full-time work experience
Boeing: Team Lead and DBA
Deloitte: Project Manager
Intel: Engineering Manager
Microsoft: Senior Program Manager
CG Inc: Lead Data Scientist

Technical Expertise
- DATA SCIENCE
- AI
- PYTHON
- R
- DEEP LEARNING
- MACHINE LEARNING
- PYTORCH
- TENSORFLOW
- NLP

Training Feedback
- AI & DATA SCIENCE: 4.7/5.0
- MACHINE LEARNING: 4.8/5.0
- DEEP LEARNING: 4.9/5.0
- PYTHON: 4.9/5.0
Our Training Program

Start

1. Introduction to AI, ML, Data Science and Statistics

2. Introduction to Python

3. Data Analysis using Python

4. Data Visualization using Seaborn, MatPlotLib

5. Introduction to Machine Learning

6. Machine Learning

7. Advanced ML

8. Introduction to Deep Learning

9. Deep Learning - Computer Vision

10. Final Project - Detecting Objects in Images

Finish
Introduction to AI

The Introduction to Artificial Intelligence, Machine Learning, and Data Science session introduces these ground-breaking technologies with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about AI, ML and Data Science
- Get basic understanding on how these technologies can be leveraged
- What are different data types and the importance of data
- Get insights into how to make data-driven decisions
- Understand the fundamentals of statistics
- Distinguish and work with different types of distribution

Course curriculum

- What is AI? Types of AI? Practical applications of AI
- What is Machine Learning? Types of Machine Learning? Applications
- What is Data Science? How it is related to AI & ML? Applications
- Demo - Object Detection for Self Driving Car using YOLO
- What is Data? Types of Data? What is EDA?
- Descriptive Statistics, Probability and Hypothesis Testing
- Types of distributions, measures of central tendency and correlation
- Inferential Statistics, confidence intervals and covariance
Introduction to Python

The Introduction to Python session introduces Python programming language necessary for building Machine Learning and Deep Learning models with simple use cases and practical examples.

Key Learning Objectives

- Write simple Python programs by using built-in data types
- Effectively use variables, strings, functions, loops, conditions
- Get basic understanding of Object-Oriented Programming concepts
- Understand commonly used built-in methods
- Get insights into how to use lists, sets, dictionaries, and tuples
- Execute programs that use File Read/Write operations

Course curriculum

- Python data types
- Variables and their scope
- Control flow, conditional statements and loops
- Objects, classes and methods
- File handling
- Exceptions
- Libraries and packages

Project

- Simulate Banking operations enabling balance enquiry, deposit and withdraw operations for customers.
Data Analysis using Python

The Data Analysis session introduces important aspects of data analysis using Pandas, NumPy and SciPy libraries with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about best practices of data analysis
- Get basic understanding about importing data from various sources
- Get insights into how to clean and transform data
- Understand the fundamentals of Pandas and NumPy packages
- Perform high-level mathematical computing using the NumPy
- Extract useful data from websites by using web scrapin
g

Course curriculum

- Fundamentals of data analysis
- Importing data from diverse sources (text, excel, csv and websites)
- Series and DataFrame objects of Pandas (Panel Data structures)
- Array, matrix and other math manipulations using NumPy
- Using statistical methods to fill missing values of data
- Identifying and addressing data outliers effectively
- Concepts of salars, vectors and manipulation of vectors
- Scientific and technical computing using the SciPy package
Data Visualization

The Introduction to Data Visualization session introduces important and commonly used open-sources data visualization packages with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about major visualization techniques
- Get basic understanding of Matplotlib and Seaborn libraries
- What are different visualizations and the importance of each style
- Get insights into the univariate, bivariate and multivariate plots
- Understand how to manipulate the styles of various plots
- Learn customizations that make the visualizations impressive

Course curriculum

- Introduction to Matplotlib and Seaborn
- Line plot, Bar chart and Histograms
- Scatter plot, Pair plot and Box plots
- Heatmaps and Kernel Density Estimate plots
- Combining various styles to visualize all aspects of data
- Industry-standard tools for building interactive dashboards

Project

- Analyze and visualize Titanic data by using Pandas, NumPy, Matplotlib and Seaborn
Introduction to Machine Learning

The Introduction to Machine Learning session introduces basic concepts of Machine Learning with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about Machine Learning
- Get understanding on how to train the Machine Learning models
- Learn about different types of Machine Learning
- Get insights into basic metrics for Machine Learning
- Understand the fundamentals of Confusion Matrix
- Distinguish and work with different algorithms

Course curriculum

- Introduction to Machine Learning
- Supervised Machine Learning
- Unsupervised Machine Learning
- Recommender Systems and applications
- Reinforcement Learning and its applications
- Scikitlearn package and its use in Machine Learning principles
- Algorithms and applications of Machine Learning
- Metrics for measuring the results of Machine Learning
Machine Learning Algorithms

The Introduction to Machine Learning algorithms session introduces all the commonly used Machine Learning algorithms with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about Machine Learning algorithms
- Get basic understanding on how to use the algorithms
- Use Scikitlearn and other open source tools for model building
- Learn how to decide what algorithm is best suited for a problem
- Get insights into how to make data-driven decisions
- Understand the fundamentals of Scaling and Feature selection

Course curriculum

- Overview of Machine Learning algorithms
- Classification Algorithms and Regression Algorithms
- Linear Regression and Logistic Regression
- Naive-Bayes Classifier and K-NN algorithm
- Support Vector Machines for classification and regression
- Decision Trees and Random Forest Algorithms

Project

- Predict whether or not a patient has diabetes, based on diagnostic measurements data provided by the National Institute of Diabetes.
Advanced Machine Learning

The Advanced Machine Learning session introduces Ensemble Machine Learning Techniques with simple use cases and practical examples.

Key Learning Objectives

- Validate Machine Learning models
- Decode various accuracy metrics.
- Get basic understanding on Ensemble methods
- Improve the final models using various optimization techniques
- Use Boosting & Bagging techniques for optimization
- Get insights into how stacking works

Course curriculum

- Introduction to Ensemble methods
- Bagging and its applications
- Boosting and its application
- Differentiate between bagging and boosting
- Introduction to pipelines and cross validation
- Introduction to stacking
- Clustering, Dimensionality Reduction and PCA
- K-Means algorithm and its applications
Introduction to Deep Learning

The Introduction to Deep Learning session introduces Artificial Neural Networks with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about Artificial Neural Networks
- Get basic understanding on how these Neural Networks can be used
- Get insights into pre-trained neural networks
- Understand the fundamentals of Back Propagation
- Basic understanding of transfer learning
- Learn to train Convolutional Neural Networks

Course curriculum

- Introduction to Deep Learning
- Single layer and multi-layer Perceptrons
- Artificial Neural Networks and its applications
- Convolutional Neural Networks and its application
- Introduction to Tensorflow framework of Google
- Using Google's Colab for training with GPUs and TPUs

Project

- Hand-written digit recognition using Convolutional Neural Networks on the MNIST dataset
Deep Learning - Computer Vision

The Deep Learning - Computer Vision session introduces Object detection and segmentation networks with simple use cases and practical examples.

Key Learning Objectives

- Gain fundamental knowledge about computer vision
- Get basic understanding on YOLO
- Use pre-trained network weights
- Get insights into the architecture of neural networks
- Understand the fundamentals of optimizers and hyper parameters
- Get basic understanding of Tensorflow and PyTorch frameworks

Course curriculum

- Introduction to pre-trained networks - VGG16 and YOLO
- OpenCV and other packages for Computer Vision
- Image Segmentation
- Object Detection
- Introduction to Pytorch framework of Facebook
- Tools and Techniques to train Neural Networks
- Building and training object-detection neural networks
- Evaluating and optimizing Neural Networks
Final Project

The final project of the program tests the deep understanding of computer vision concepts. Participants used their newly acquired insights into Convolutional Neural Networks and use them to build YOLO network by using pre-trained weights from 80 COCO image classes. The network should identify traffic lights, cars, trucks and pedestrians from the images or videos of flowing traffic.

Key Learning Objectives

- Gain fundamental knowledge of computer vision
- Get basic understanding on how to use pretrained neural networks
- Learn about different object detection techniques
- Get insights into how to custom train a neural network
- Understand the fundamentals of PyTorch framework of Facebook
- Use live-streaming videos for object detection and face recognition