



UpGrad &  MIT

PG DIPLOMA IN  
**MACHINE LEARNING  
& AI**

11 MONTHS | ONLINE



**UpGrad** is an online education platform to help individuals develop their professional potential in the most engaging learning environment. Online education is a fundamental disruption that will have a far-reaching impact. At UpGrad, we are working towards transforming this online education wave into a tsunami! We are taking a full-stack approach of leveraging content, technology, marketing and services to offer quality education at scale in partnership with corporates & academics to offer a rigorous & industry relevant program.

The field of Data Science is maturing rapidly and demands professionals skilled not only in Statistics, but also in advanced concepts such as Natural Language Processing and Neural Networks. Our vision is to design and deliver a quality online Post-Graduate Program in Machine Learning/AI to produce top-notch Data Scientists and Machine Learning experts and help India capitalize the next wave of Artificial Intelligence. With UpGrad, we promise to equip you with the perfect mix of business acumen and technical capabilities to help you contribute to this technological revolution.

## **Ronnie Screwvala**

*Co-Founder  
UpGrad*



**IIIT-Bangalore** is one of the leading institutes of higher education in the country and is a renowned name in the global analytics and IT industry. Our world-class faculty with years of teaching experience, have successfully worked with UpGrad to deliver quality online executive education in Data Science.

We are excited to partner with UpGrad yet again, to offer an academically rigorous and industry-relevant PG Diploma Program in Machine Learning and AI. IIIT-B's faculty will be covering the conceptual depths of topics such as Neural Networks, Deep Learning and NLP and this will be complemented by case studies from industry leaders from UpGrad's industry network. Further, our strong career support services, industry mentorship and the credibility of a PG Diploma Program will provide you just the right push to accelerate your career in Machine Learning and AI.

We invite you to take this opportunity and join us and make use of the excellent pedagogy and industry collaborations. You will truly be getting the best of both worlds, which will help you achieve success in the field of Machine Learning and AI.

**Prof. S. Sadagopan**

*Director*

*IIIT-Bangalore*



# WHY MACHINE LEARNING & AI WITH UPGRAD & IIIT-B?



## CUTTING EDGE CURRICULUM

Master advanced machine learning and artificial intelligence concepts



## PG DIPLOMA FROM IIIT-B

Earn a reputed Post Graduate Diploma without leaving your job



## ON-THE-GO LEARNING

Lectures squeezed into 30-minute learning sessions, anytime-anywhere



## FOR THE INDUSTRY, BY THE INDUSTRY

Learn application through projects created in collaboration with industry



## CAREER SUPPORT

Get access to career coaching services and get introduced to the right opportunities to upgrade yourself



## INDUSTRY MENTORSHIP

Receive 1:1 industry mentorship from ML and AI experts to guide you to your milestones

# INSIGHTS FROM INDUSTRY EXPERTS



**S. ANAND**  
CEO  
Gramener



**UJJYAINI MITRA**  
Head of Analytics  
Viacom 18



**HINDOL BASU**  
Partner  
Tata IQ



**KALPANA SUBBARAMAPPA**  
Ex-AVP, Decision Sciences  
GENPACT



**SAI ALLURI**  
PRO Analytics &  
Strategy Manager  
Uber



**ANKIT JAIN**  
Data Scientist  
Uber



**RAJ ONKAR**  
Data Science Manager  
Accenture



**ANSHUMAN GUPTA, PHD**  
Director - Data Science  
Pitney Bowes

# CONCEPTS FROM TOP ACADEMICIANS



**PROF. S. SADAGOPAN**  
Director  
IIIT Bangalore



**TRICHA ANJALI**  
Associate Professor  
IIIT Bangalore



**G SRINIVASARAGHAVAN**  
Professor  
IIIT Bangalore



**DINESH BABU JAYAGOPI**  
Assistant Professor  
IIIT Bangalore



**CHANDRASHEKAR  
RAMANATHAN**  
Dean (Academics)  
IIIT Bangalore



**SRINATH SRINIVASA**  
Dean (R&D)  
IIIT Bangalore

# PROGRAM CURRICULUM

*Note: This curriculum is subject to change based on inputs from IIIT-B and Industry.*

## PRE-PROGRAM PREPARATION

### PYTHON FOR DATA ANALYSIS

Get acquainted with Data Structures, Object Oriented Programming, Data Manipulation and Data Visualization in Python

### INTRODUCTION TO SQL

Learn SQL for querying information from databases

### MATH FOR DATA ANALYSIS

Brush up your knowledge of Linear Algebra, Matrices, Eigen Vectors and their application for Data Analysis

## STATISTICS ESSENTIALS

### INFERENCE STATISTICS

Learn Probability Distribution Functions, Random Variables, Sampling Methods, Central Limit Theorem and more to draw inferences

### HYPOTHESIS TESTING

Understand how to formulate and test hypotheses to solve business problems

### EXPLORATORY DATA ANALYSIS

Learn how to summarize data sets and derive initial insights

## MACHINE LEARNING

### LINEAR REGRESSION

Learn to implement linear regression and predict continuous data values

### SUPERVISE LEARNING

Understand and implement algorithms like Naive Bayes and Logistic Regression

### UNSUPERVISED LEARNING

Learn how to create segments based on similarities using K-Means and Hierarchical clustering

### SUPPORT VECTOR MACHINES

Learn to classify data points using support vectors

### DECISION TREES

Tree-based model that is simple and easy to use. Learn the fundamentals on how to implement them

## NATURAL LANGUAGE PROCESSING

### BASICS OF TEXT PROCESSING

Get started with the Natural language toolkit, learn the basics of text processing in python

### LEXICAL PROCESSING

Learn to extract features from unstructured text and build machine learning models on text data

### SYNTAX AND SEMANTICS

Conduct sentiment analysis, learn to parse English sentences and extract meaning from them

### OTHER PROBLEMS IN TEXT ANALYTICS

Explore the applications of text analytics in new areas and various business domains

## DEEP LEARNING & NEURAL NETWORKS

### INFORMATION FLOW IN A NEURAL NETWORK

Understand the components and structure of artificial neural networks

### TRAINING A NEURAL NETWORK

Learn the cutting-edge techniques used to train highly complex neural networks

### CONVOLUTIONAL NEURAL NETWORKS

Use CNN's to solve complex image classification problems

### RECURRENT NEURAL NETWORKS

Study LSTMs and RNN's applications in text analytics

### CREATING AND DEPLOYING NETWORKS USING TENSORFLOW AND KERAS

Build and deploy your own deep neural networks on a website, learn to use tensorflow API and keras

## GRAPHICAL MODELS

### DIRECTED AND UNDIRECTED MODELS

Learn the basics of directed and undirected graphs

### INFERENCE

Learn how graphical models draw inferences using datasets

### LEARNING

Learn to estimate parameters and structure of graphical models

## REINFORCEMENT LEARNING

### INTRODUCTION TO RL

Understand the basics of RL and its applications in AI

### MARKOV DECISION PROCESSES

Model processes as Markov chains, learn algorithms for solving optimisation problems

### Q-LEARNING

Write Q-learning algorithms to solve complex RL problems



# PROGRAM DETAILS

## PROGRAM STARTS

January, 2018\*

*\*Preparatory sessions will be starting from December, 2017.*

## WEEKLY COMMITMENT

10 hours per week

4-5 hours of asynchronous learning time  
5-7 hours of assignments & projects  
1 live session every 3 weeks

## DURATION

11 Months

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## PROGRAM FEE

INR 2,75,000 (Incl. of all taxes)

Flexible Payment Options Available

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## ELIGIBILITY

Bachelor's/Master's degrees in Computer Science/Engineering/Math/Statistics/Economics/Science with a minimum of 50% marks in graduation

## SELECTION PROCESS

Candidates are expected to fill out an application form and then undergo a selection test to assess college-level mathematics and basic programming skill

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For further details, call us at **+91 22 6156 2183** or contact:



**ROHIT SHARMA**

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**ISHANI MUKHERJEE**

Chief Admissions Counsellor

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## COMPANY INFORMATION

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