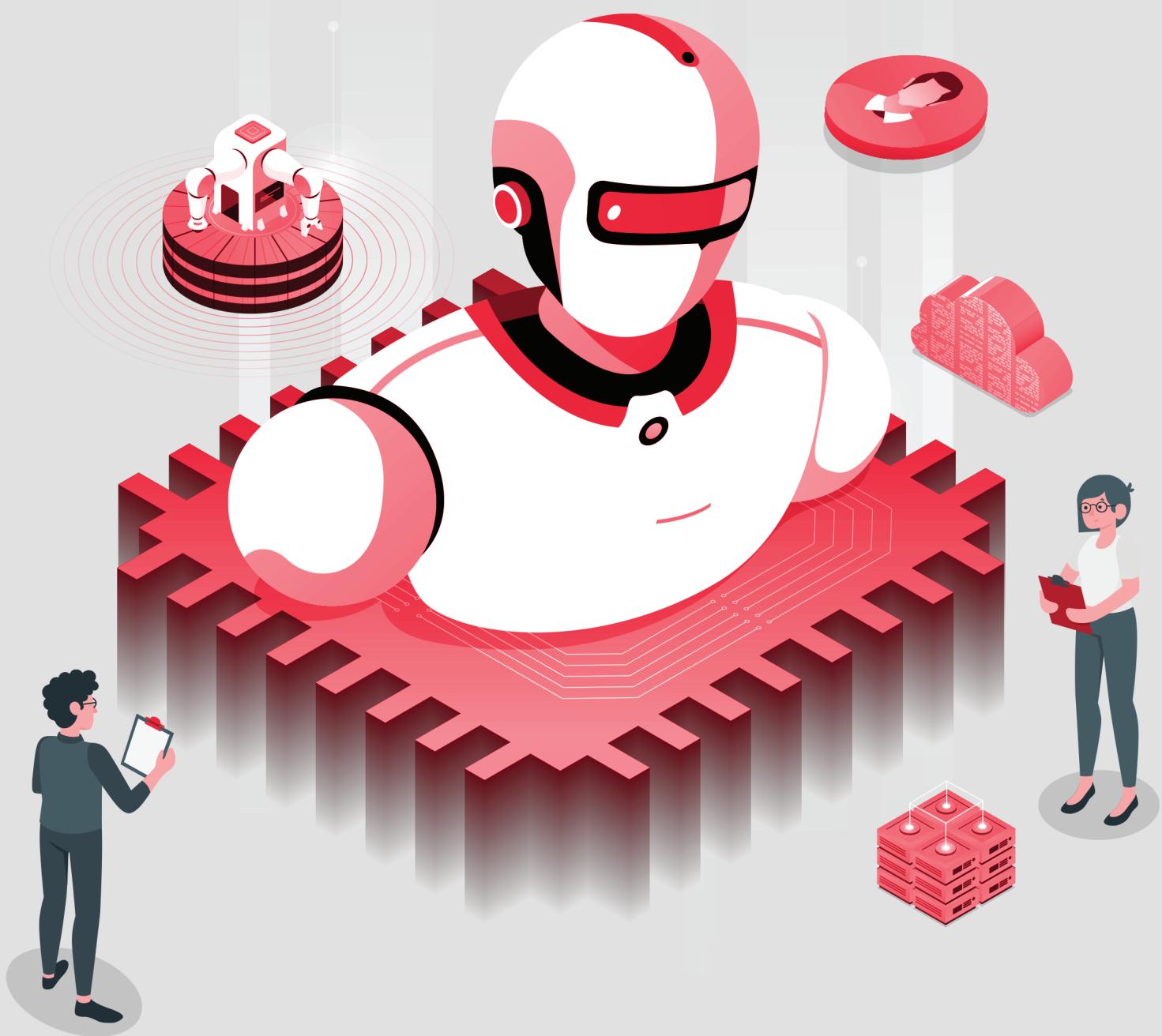


# Master of Science in Machine Learning & Artificial Intelligence



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# About the Program

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Online education is a fundamental disruption that will have a far-reaching impact.

upGrad is an online higher education platform that helps individuals develop their professional potential in the most engaging learning environment, was founded with this in mind. Since inception, upGrad has delivered over 20 million hours of learning, delivering programs by collaborating with universities across the world including Duke, IIT-Madras, IIIT-Bangalore and Deakin Business School among others.

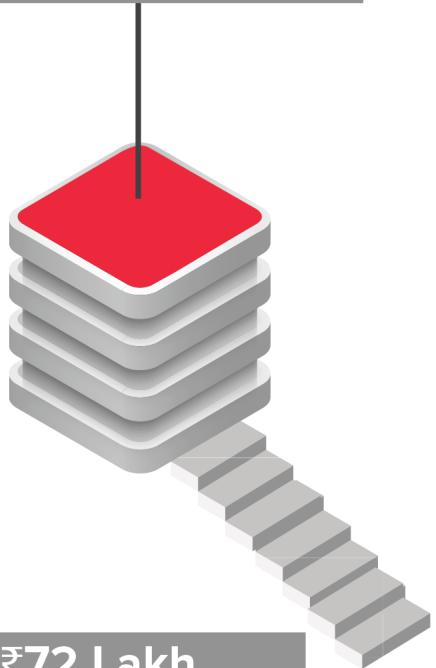
upGrad, in collaboration with IIT Madras & Liverpool John Moores University, India's and the UK's top engineering colleges, is offering programs specialising in Machine Learning & AI; and is excited to launch a one-of-its-kind, academically rigorous and industrially relevant Master of Science in Machine Learning & AI.

The batch includes an average of 6+ yrs of experience and covers the conceptual depths of topics such as Machine Learning, Deployment, Cloud, and Big Data Analytics. This will be complemented by industry relevant case studies from major industry verticals by industry leaders with 8+ yrs of experience from upGrad's industry network.

Further, upGrad's strong placement network, industry mentorship and the credibility of an IIT Madras certification along with an M.Sc. degree from LJMU will provide you with just the right push to accelerate your career in Machine Learning & AI.

# Why upGrad?

400% Highest Hike



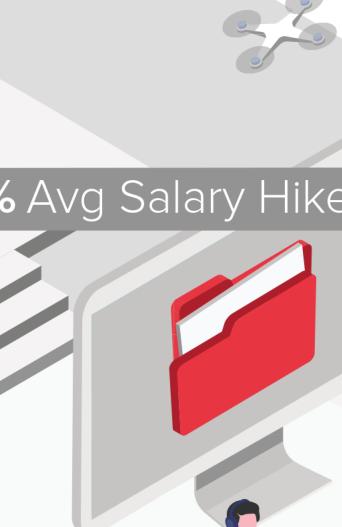
30,000+ Learners

₹72 Lakh  
Highest Salary

58% Avg Salary Hike

300+ Hiring Partners

700+ Industry Experts



# Program Highlights

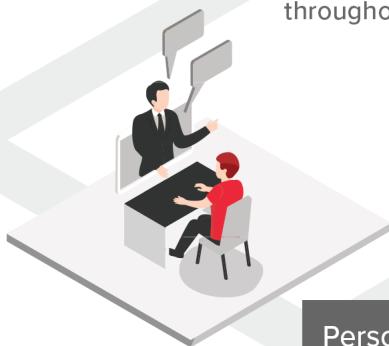
Credentials from IIT Madras & Liverpool John Moores University

M.Sc. from Liverpool John Moores University, and an Advanced Certification in Machine Learning & Cloud from IIT Madras



## Dedicated Career Assistance

Receive 360 degree career support from mock interviews with hiring managers, resume building, career fairs, industry mentors and much more.



## For The Industry, By The Industry

Learn from 25+ case studies and industry experts to mentor you throughout the program

## Personalised Mentorship

Get unparalleled personalised mentorship and doubt resolution from IIT Madras faculty and our panel of industry experts



## Deployment of models

Learn how to deploy machine learning models using cloud



## Blended Learning

Learn with the ease and flexibility of recorded sessions as well as live sessions - designed to ensure a wholesome learning experience



## LEARN FROM FACULTY & INDUSTRY EXPERTS



### PROFESSOR-CSE DEPARTMENT

#### DR. JANAKIRAM D.

Dr. Janakiram D., a PhD, heads and coordinates the research activities of the Distributed and Object Systems Lab at IIT Madras.



IIT Madras



### HEAD OF ANALYTICS

#### UJJYAINI MITRA

Has worked with illustrious organisations such as McKinsey & Co., Flipkart, Bharti Airtel, and has over 11 years of experience.



### LEAD | BUSINESS ANALYTICS

#### MIRZA RAHIM BAIG

Advanced analytics professional with 8+ years of experience as a consultant in the e-commerce and healthcare domains.



### CEO

#### S. ANAND

A Gold medallist from IIM Bangalore, an alumnus of IIT Madras and London School of Business, Anand is among the top 10 data scientists in India.





## LEARN FROM FACULTY & INDUSTRY EXPERTS



### SOFTWARE ARCHITECT - ML

#### VINOD SESHAUDRI

With 14+ years of industry experience, Vinod, an MS Graduate in Machine Learning, delivers machine learning solutions at Wipro.



### PYTHON EXPERT

#### VAIDEHI TAKALIKAR

Vaidehi is a Post-Graduate in Computer Engineering and is experienced in training corporate employees in Tableau, Python.



### FACULTY - ENGINEERING AND TECHNOLOGY

#### DR. GABRIELA CZANNER

A Senior Lecturer in Statistics and Data Science at Department of Applied Mathematics at LJMU. Her research focus is advanced statistics for decision support.



### FACULTY - COMPUTER SCIENCE

#### DR. ATIF WARAIKH

A Senior faculty of Engineering and Technology at LJMU who has multiple publications in the healthcare domain.





## LEARN FROM FACULTY & INDUSTRY EXPERTS



### PROFESSOR - ARTIFICIAL INTELLIGENCE

#### PROF. DHIYA AL-JUMEILY

A Senior Member of the IEEE and a Chartered IT Professional. He is a fellow of the UK Higher Education Academy.



### HEAD OF DEPT - APPLIED MATHEMATICS

#### PROF. PAULO LISBOA

Studied mathematical physics at LU and was the chairman of Industrial Mathematics at LJMU in 1996 and Head of Graduate School in 2002



# upGrad Learning Experience

## Coaching

- Student Support Team & upGrad Buddy
- Weekly real-time doubt clearing sessions
- Live Discussion forum for peer-to-peer doubt resolution monitored by technical experts
- Peer-to-peer networking opportunities with an alumni pool of 10,000+
- Lab walk-throughs of 25+ industry-driven case studies
- 6 Employability Tests for industry readiness
- Access to the program for up to 3 years

## Format

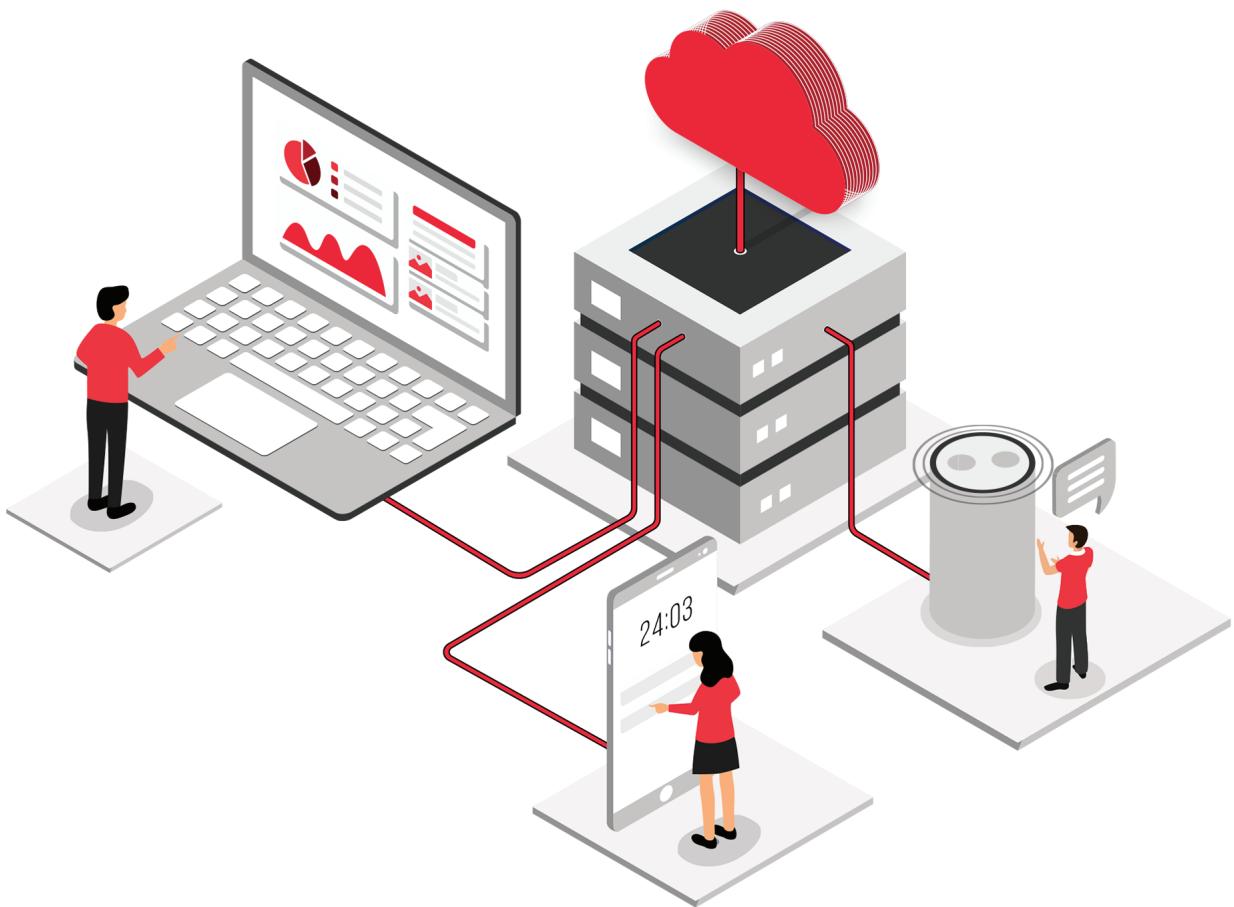
Online format with live sessions weekly: Weekly live learning sessions from industry experts to help with topic walkthroughs, doubt resolution and personalised project feedback. Offline sessions such as Base-camps and hackathons

## Mentorship

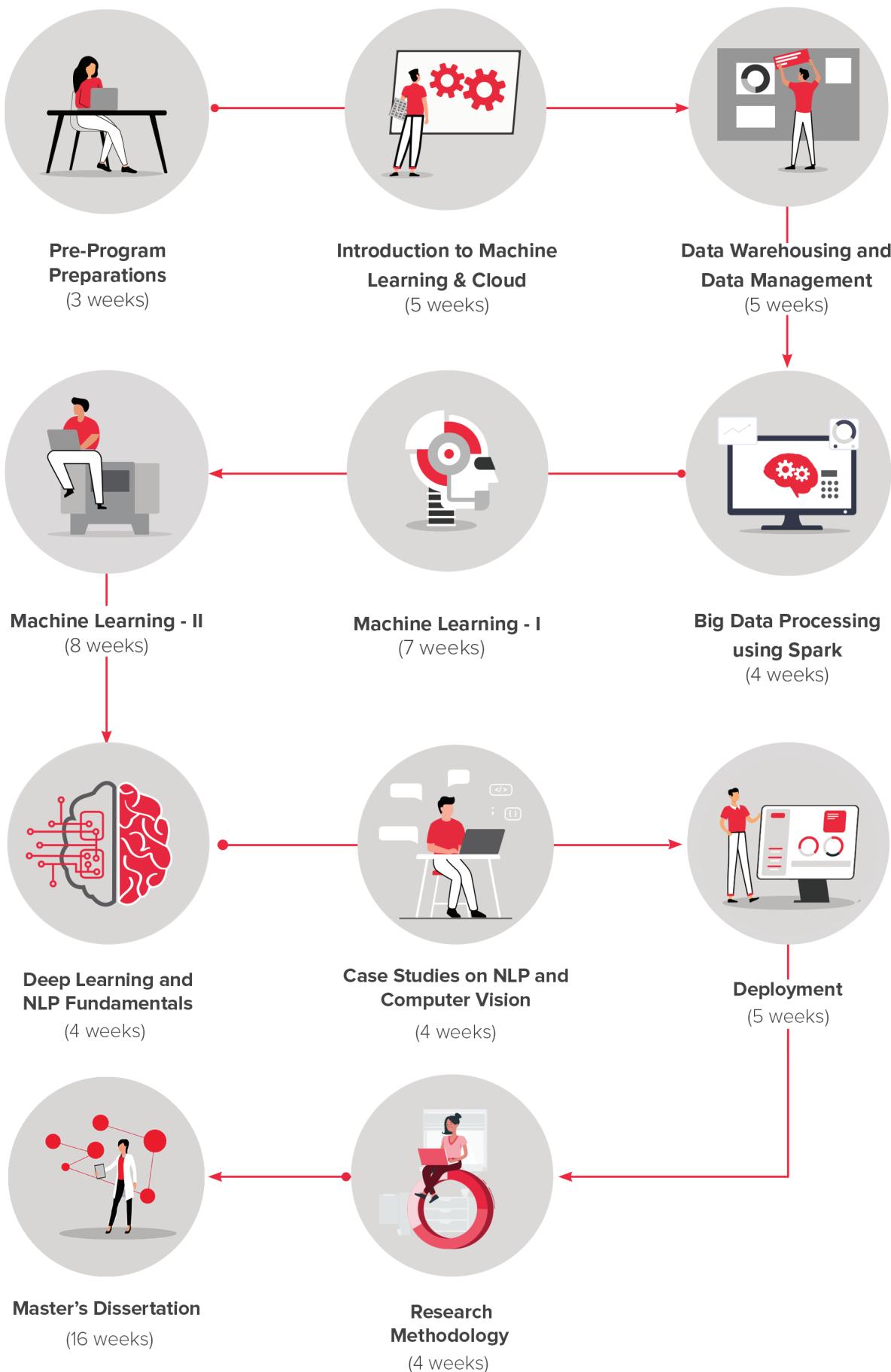
60+ live interactive sessions with industry experts, Fortnightly personalised group (1:8) mentorship sessions and a dedicated Student mentor for pro-active mentoring

## Hands-on projects

25 + case studies to choose from as well as a Capstone Project and to apply learnings



# Learning Path



# Industry Projects



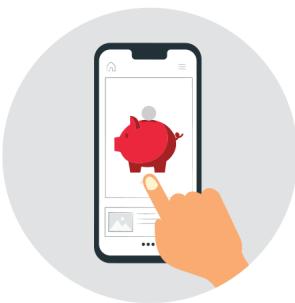
**Uber Case Study**  
**(Practice Exercise in Prep)**  
(Tool: Python)



**Stack Overflow Case Study**  
(Tool: Python)



**Data Warehousing Case Study**  
(Tool: Hive)



**Ecommerce Sales EDA Case Study**  
(Tool: Hive)



**Twitter HashTag Analysis,  
using Spark Streaming**  
(Tool: Spark)



**Recommendation System, using  
ALS (Alternating Least Squares)**  
(Tool: Spark)



**Market Basket Analysis, using  
Apriori Algorithm**  
(Tool: Spark)



**A/B Testing**  
(Tool: Python)



**House Price Prediction**  
(Tool: Python)



**NYC Taxi Fare Prediction**  
(Tool: Spark)



**Telecom Churn Prediction**  
(Tool: Python)



**Click-Through Rate Prediction**  
(Tool: Spark)



**Credit Card Application Approval Assignment**  
(Tool: Spark)



**Heart Disease Prediction**  
(Tool: Python)



**Credit Card Fraud Detection**  
(Tool: Spark)



**Chicago Crime SaaS Case Study**  
(Tool: Spark)



**Ecommerce Sales Prediction Assignment**  
(Tool: Spark)



**PUBG Strategy Demystification**  
(Tool: Spark)



**Customer Segmentation Analysis**  
(Tool: Python)



**Recommendation System using PCA and KNN**  
(Tool: Spark)

# Program Curriculum

TIMELINE	COURSE NUMBER	COURSE	MODULE NAME
PREP	COURSE 1	PRE-PROGRAM PREPARATORY RESOURCES	<ul style="list-style-type: none"><li>• REVISION OF PREP CONTENT</li></ul>
WEEK 3 - 9	COURSE 2	INTRODUCTION TO MACHINE LEARNING IN CLOUD	<ul style="list-style-type: none"><li>• WELCOME TO THE PROGRAM (UNGRADED)</li><li>• EXPLORATORY DATA ANALYSIS</li><li>• INTRODUCTION TO ML + UNDERSTANDING THE ML PIPELINE</li><li>• INTRODUCTION TO CLOUD</li><li>• ELASTIC PROVISION SERVICES OF CLOUD AND SETTING UP CLOUD</li><li>• COURSE 2 ASSIGNMENT - EDA USING CLOUD</li><li>• EXAM (COURSE 2)</li></ul>
WEEK 10 - 15	COURSE 3	DATA WAREHOUSING AND DATA MANAGEMENT	<ul style="list-style-type: none"><li>• HADOOP FRAMEWORK</li><li>• SQL QUERYING</li><li>• HIVE QUERYING</li><li>• CASE STUDY - DATA WAREHOUSING AND DATA MANAGEMENT</li><li>• COURSE 3 - ASSIGNMENT - HIVE QUERYING</li><li>• CAREER WEEK / EMPLOYABILITY TEST</li></ul>

# Program Curriculum

TIMELINE	COURSE NUMBER	COURSE	MODULE NAME
WEEK 16 - 21	COURSE 4	BIG DATA PROCESSING USING SPARK	<ul style="list-style-type: none"><li>INTRODUCTION TO SPARK</li><li>PYSPARK PROGRAMMING</li><li>PYSPARK IMPLEMENTATION ON A DATASET</li><li>ASSIGNMENT</li><li>EXAM (COURSE 3 &amp; 4)</li></ul>
WEEK 22 - 27	COURSE 5	MACHINE LEARNING - 1	<ul style="list-style-type: none"><li>INFERENTIAL STATISTICS AND HYPOTHESIS TESTING</li><li>INFERENTIAL STATISTICS AND HYPOTHESIS TESTING</li><li>LINEAR REGRESSION</li><li>LINEAR REGRESSION</li><li>LOGISTIC REGRESSION</li></ul>
WEEK 28 - 35	COURSE 6	MACHINE LEARNING - 2	<ul style="list-style-type: none"><li>CAREER WEEK / EMPLOYABILITY TEST</li><li>DECISION TREES</li><li>RANDOM FOREST TREES</li><li>ASSIGNMENT</li><li>PRINCIPAL COMPONENT ANALYSIS + LINEAR ALGEBRA</li><li>CLUSTERING</li><li>EXAM (Course 5 &amp; 6)</li></ul>

# Program Curriculum

<b>TIMELINE</b>	<b>COURSE NUMBER</b>	<b>COURSE</b>	<b>MODULE NAME</b>
<b>WEEK 36 - 42</b>	<b>COURSE 7</b>	<b>DEEP LEARNING AND NLP FUNDAMENTALS</b>	<ul style="list-style-type: none"><li>• INTRODUCTION TO TENSORFLOW</li><li>• INTRODUCTION TO NEURAL NETS</li><li>• CONVOLUTIONAL NEURAL NETS</li><li>• NLP FUNDAMENTALS</li><li>• SEQUENCE MODELS</li><li>• ASSIGNMENT</li><li>• BREAK</li></ul>
<b>WEEK 43 - 46</b>	<b>COURSE 8</b>	<b>CASE STUDIES ON NLP AND COMPUTER VISION</b>	<ul style="list-style-type: none"><li>• CASE STUDY ON COMPUTER VISION</li><li>• CASE STUDY ON APPLICATIONS OF DEEP LEARNING IN NLP</li><li>• IMPLEMENTATION: REGRESSION + MODEL SELECTION ON SAGEMAKER</li><li>• ASSIGNMENT</li></ul>
<b>WEEK 47 - 72</b>	<b>COURSE 9</b>	<b>DEPLOYMENT CAPSTONE</b>	<ul style="list-style-type: none"><li>• DEPLOYMENT</li><li>• CAPSTONE PROJECT</li></ul>

\*This curriculum is subject to change based on inputs from the university

**RESEARCH METHODOLOGIES****2 MONTHS**

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Familiarise yourself with different aspects of research, its ethical dimension, evaluation of literature, etc.

- What is research?
- Types of research
- Research process
- Data collection
- Report writing and presentation
- Scientific ethics

**MASTER'S DISSERTATION****4 MONTHS**

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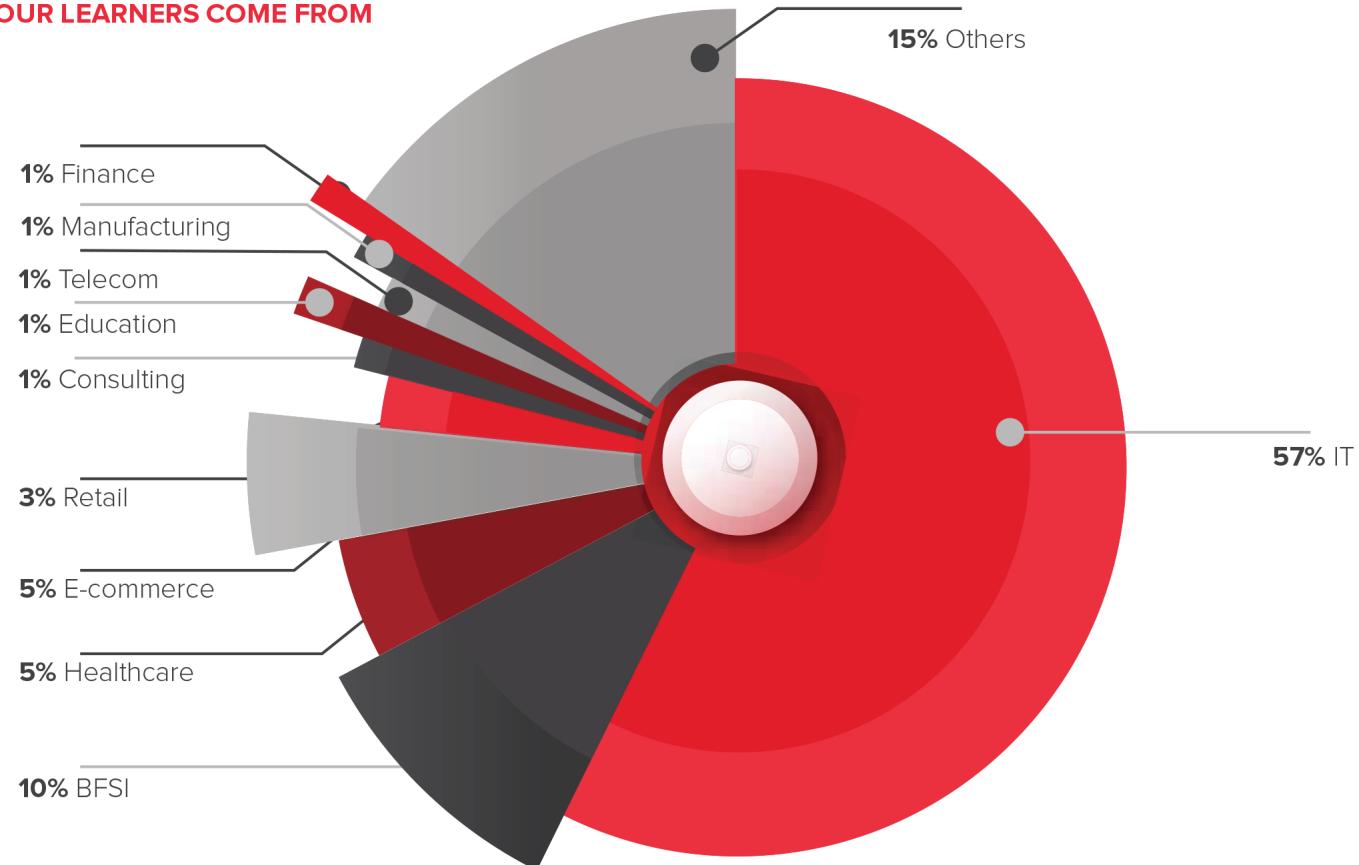
Work on interesting projects of your choice. The list of projects is given below:

- Investigate dietary patterns and metabolite fingerprints of takeaway (fast) food consumers using PCA and clustering methods
  - Investigate a diagnosis of eye diseases using imaging ophthalmic data
  - Structure medical images with information geometry
  - Using Social media feed to place tweets regarding natural disasters on a map
  - Preventing credit card fraud through pattern recognition
  - Developing a recommendation system for a Media giant
  - Risk modelling for Financial activities and Investment Banking
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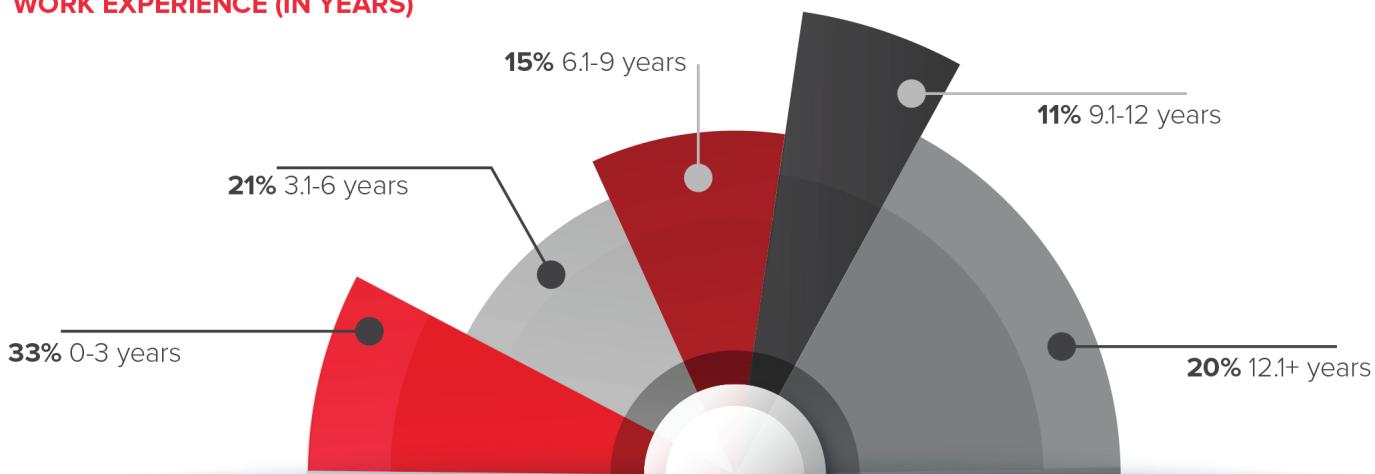
# Meet the Class

## INDUSTRIES

### OUR LEARNERS COME FROM



## WORK EXPERIENCE (IN YEARS)



**A few of the companies our learners are from:** Accenture, Amazon, Cognizant, Deloitte, Infosys, Microsoft, Wipro, EY, Citibank, Cisco, Thomson Reuters

# Career Support

## Job Opportunities Portal

Gain exclusive access to upGrad's 200 job openings each quarter, giving you the opportunity to be interviewed by upGrad's hiring partners.

## upGrad Career Fairs

Regular hiring drives in major cities across India, giving you the opportunity to interview with upGrad's 300+ hiring partners, ensuring you get every opportunity you deserve.

## Just-In-Time Interviews

Get company and role-specific preparation with mock interviews right before your actual interviews.

## Resume Review

Obtain specific, personalised inputs on your resume structure and content.

## Personalised Mentorship

Get mentored by an experienced data science industry expert and receive personalised feedback with 4 calls spread over a period of 3 months.

## Career Mentor

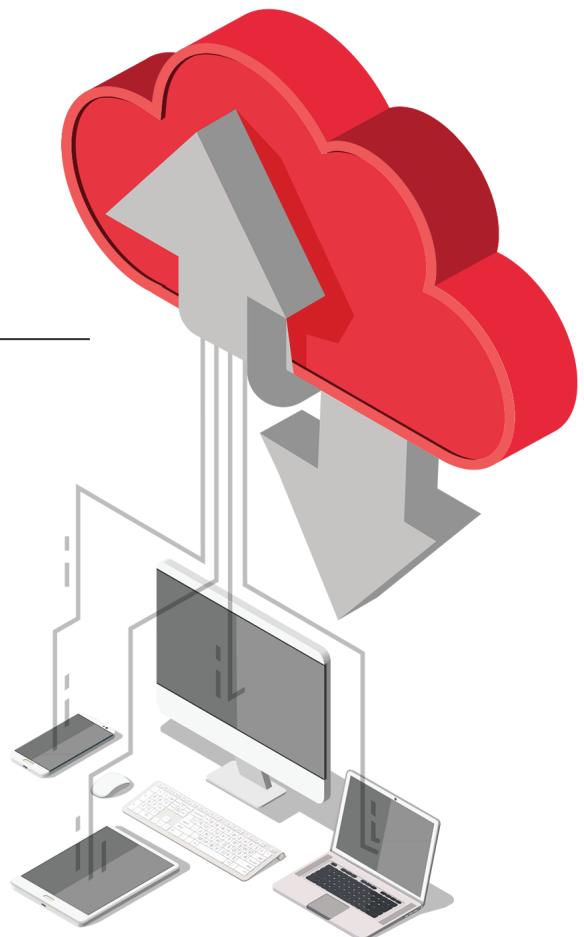
Get a dedicated career mentor to help track your weekly company application targets, coach you on your profile and career transition journey.

## Post Graduation Career Support

Career sessions are continued post graduation because we want you to have all the help you need. This includes: 80 hours of live sessions with industry mentors to guide you, dedicated mentorship and access to upGrad career assistance resources.

## Company-Specific Preparation

Get company-specific guidance with access to a carefully curated pool of interview resources per company to ensure you are interview-ready for the company of your choice.



# Hear from Our Learners

## Vijay Mudivedu, Data Science Oct'17, Experience: 7+ Years



“After just 6 months of starting my AI and ML journey, I have been rewarded with a Data Scientist position in Tech Mahindra with a very hefty package and this is just after going halfway through the program. I can put my money on this program on any given day and assure everyone that this is one program that stands apart from every other in the market. The program pedagogy is impeccable but what I liked the most is the constant motivation from my student mentor which kept me going in the program.”

## Kunwar Alok, Data Science Oct'17, Experience: 15+ Years



You may not believe but I have never done coding in my life. I did it during this course and was thrilled to see the outcomes coming out of those codes. Just the way I used to get happy after solving a good (tough) math problems during my school age. Thanks to UpGrad for doing a great service to people like us who at the age of 43 can dream to study with budding talents around.

## Tuhin Pal, Data Science Dec'17, Experience: 5 Years



I appreciate the platform provided by upGrad how they have arranged the modules and the assignments are quality ones. You will relish your college days again as the exams are felt like semester ones, you can't talk to anybody. Modules are locked till you complete the previous one so it feels like clearing a semester and going to the next one.

## Harkirat Dhillon, Data Science Dec'17, Experience: 8 Years



A dedicated regimen for studying the program and keep learning is the key to be successful and pass the program. This program will help build a strong foundation for successful transition to data science. Additionally, participating in hackathons and Kaggle competitions to solve real world problems will definitely give you an edge and land a job if one is willing to work hard.

# Program Details and Admission Process

## PROGRAM DURATION AND FORMAT

18 Months | Online

## PROGRAM START DATES

Please refer to the [website](#) for program start dates.

## PROGRAM FEE

INR 4,99,000 (Inclusive of taxes)

## ELIGIBILITY

Bachelor's Degree with 50% or equivalent at graduation. Coding experience required\*

\*B.Tech or B.E- preferably 60% or higher or first class if you have less than two years of experience

## TIME COMMITMENT (12-15 hours/week)



**6-7 HOURS**

Asynchronous learning time.



**6-7 HOURS**

Assignments and projects.



**1 LIVE SESSION**

Every two weeks.

## SELECTION PROCESS



### STEP 1: Online Eligibility Test

Fill out an application and take a short 45 mins Online test with 8 questions.



### STEP 2: Review and Shortlisting of Suitable Candidates

Our faculty will review all applications, considering the educational and professional background of an applicant and review the test scores where applicable. Following this, Offer letters will be rolled out so you are assured a great peer group to learn and network with.

A virtual interview will be conducted before offer letters will be rolled out so you are assured a great peer group to learn and network with.



### STEP 3: Content

Make a quick block payment with assistance from our loan partners where required, receive immediate access to the prep content and begin your upGrad journey.

## FOR FURTHER INFORMATION, CONTACT

mscloud@upgrad.com

1800-210-2020

## COMPANY INFORMATION

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Worli, Mumbai - 400018.