Foundations of Artificial Intelligence and Machine Learning
"AI will add 2.3 million jobs by 2020"
~ Gartner

Tech giants are rapidly migrating to an AI-first world. The industry is getting disrupted. It is very obvious where tomorrow's jobs are going to be. Upgrading your expertise in AI/ML is the best way to sustain your career growth and professional stability. *In the words of famous Jack Trout, it is time to 'differentiate or die'.*

And, whether we are aware or not, every aspect of our life is touched by AI/ML applications like Shopping Assistants, Spam Filters, Home Automation, Chat Bots, Self Driving Cars, Surgical Bots, Robo Advisors, Algorithmic Trading, Robotic Process Automation, Speech Recognition, Real-time language translation, Computer Vision, Data Mining, and a whole lot more.
Is this program for me?

This is a state-of-the-art program, designed by IIIT-Hyderabad Machine Learning Lab - one of the top research labs working in this area. It is an experiential, application-driven program for highly motivated working professionals to become ML practitioners. It is designed to offer practical knowledge on top of the theoretical foundations of Artificial Intelligence and Machine Learning.

Therefore, this immersive program offers not just weekend lecture sessions for working IT professionals but also 24x7 access to lab sessions with 30 real-world case studies. It is an intensive program which will channelise your high aspirations. In addition to the 7 hours of contact every week it is expected that you will put in additional 5-10 hours every week. At the completion of this program, you will be able to build and deploy useful machine learning applications.
Program Curriculum

This program comprises of three modules:

Module 1: Introduction to Machine Learning

1. Motivation
2. The Classification Problem
3. Representation of World
4. Visualization and Unsupervised Learning
5. Data preparation with three problems

Duration: 5 weeks

Module 2: Supervised Learning

6. Simple Linear Algorithms and Training
7. Linear non-separability and More Algorithms
8. Decision Trees
9. Training, Validation and Testing
10. Support Vector Machines

Duration: 5 weeks

Module 3: Introduction Deep Learning

11. Introduction to DL and Toolchain
12. Gradient Descent and Backpropagation
13. MLP as a classifier
14. Convolutional Neural Networks
15. Recurrent Neural Networks

Duration: 5 weeks

Program Highlights

- 15 Weeks Hybrid Program
- Weekend Contact Sessions
- 24x7 Online Labs
- Action Workshops by Industry Mentors
- Programming Experience Required
Experiential Learning

In the practical sessions you will work on a carefully selected set of problems and case studies covering the following topics, tools and techniques.

- Simple Classification Problems
- k-NN Classifiers
- Features: Extraction, Normalization, Transformation
- Dimensionality Reduction
- Simple PCA
- Visualization: ISOMAP, tSNE
- k-Means
- Logistic Classifiers
- Linear Regression
- Gradient Descent
- Perceptrons and Simple Neural Networks
- Separability vs Non-separability
- Polynomial Regression
- Dealing with noise
- Training, Validation, Testing
- Overfitting
- Support Vector Machines
- pyTorch
- Convolutions, Tensors
- Multi-layer Perceptrons
- More on Gradient Descent
- CFARNet
- CNN, RNN
- Text Generation
Learn from Leaders

Dr. C V Jawahar
Program Director and Lead Faculty
Amazon Chair Professor at IIIT-H. Renowned Expert in Machine Learning and Optimization, Document Image Analysis, and Computer Vision Problems. Ph.D. from IIT Kharagpur.

Dr. Anoop M Namboodiri
Lead Faculty
Associate Professor at IIIT-H. Expert in Pattern Recognition and Machine Learning, Computer Vision, and Biometrics. Ph.D. from Michigan State University.

Asokan Pichai
Lead Faculty
Senior Vice President at TalentSprint. Industry Instructor, Instructional Designer, and Programming Guru. Consults with FOSSEE at IIT Bombay on Python Courses.
Program Outcomes

✔ Ability to build and deploy AI/ML and Deep Learning applications at your workplace

✔ Certificate by IIIT-H Machine Learning Lab

✔ Learn from the best faculty and seasoned industry professionals

✔ Reinforce learning by applying concepts in industry relevant assignments and projects
Frequently Asked Questions

► Who is this program for? What are the academic pre-requisites for the program?

The program is intended for software professionals with at least a year of programming experience. On successful completion they will learn to build and deploy useful machine learning solutions. The Program requires good grasp of mathematical concepts, specifically basic linear algebra, basics of statistics and probability and optimisation.

► Can I pay in instalments?

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**Payment Process**

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<td>Down Payment + Processing Fee (after loan is approved by financier)</td>
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* Subject to eligibility and approval by Financier
# Choice of the Options will depend on loan eligibility as decided by the Financier

► How will the classes be scheduled?

Each week there will be one lecture session of about 2 hours. You will also have a facilitated lab workshop of 5 hours. Participants will be divided into batches and scheduled into a particular slot for each week.

► Can I change my slot?

Such flexibility will be available for a limited number of people every week.
Can I get additional lab time?
Additional lab time will be available every weekday between 18:00-20:00.

How long will the Program be for?
The Program is divided into 3 modules of 5 sessions each; each session over a weekend. So the Program is for 15 weeks. However we plan to provide a break of one week between modules for revision and catch up, so the elapsed time will be 17 weeks. We plan to end the Program with a one-day plenary workshop summarising and highlighting newer areas on May 5, 2018.

Where and when will the lecture sessions be conducted?
Lecture sessions will be conducted by IIIT Faculty for 2 hours every Saturday, at the IIIT Hyderabad Campus in Gachibowli.

Where and when will the lab sessions be conducted?
Lab sessions will be of 5 hours duration. You will be allotted one of three slots on Saturday afternoon, Sunday morning and Sunday afternoon. The location for lab sessions is TalentSprint Campus at Gachibowli opposite IIIT.

Do we need our own laptops?
You can bring your laptops. Exercises will be on a cloud-based platform. TalentSprint will provide desktops for those without laptops.

Can we do the lab exercises from home?
Yes. However, TalentSprint will provide mentors for assistance. So you can opt to come over or work on your own depending on your degree of comfort with the planned exercises.

Will additional lab time be available?
In addition to weekend slots, additional lab times will be available Monday through Friday between 18:00 hours - 20:00 hours. Mentors will be available at these times.

Are the classes online?
No. The master classes by IIIT-H faculty are Instructor-led sessions planned at IIIT-H. Of course the Program makes use of an LMS where additional material, videos, assignments etc will be hosted, which is online and can be accessed 24x7.
Is any specific programming language experience required?

The Program will use Python 3 and various libraries. The necessary python skills can be easily picked up by anyone with programming experience in any language. If needed tutotial introduction to the Python language will be organised by TalentSprint. Video lessons on Python for self study will also be made available.

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I am not from Hyderabad. Am I eligible for this program?

You have to be physically present at IIIT-H and TalentSprint for the Master Class and Labs respectively. So if you can travel every week end to Hyderabad then and only then you are eligible. We can help by scheduling your Master Class and Lab on the same day.

Can I access the labs after the Program?

You will have access to the LMS for a minimum period of 12 months, from program commencement.

Do we have Placement Support?

No. This is an intensive certificate program and as such there are no plans for placement support.

Will there be a final examination?

The program will have continuous assessment. The final grade will be determined by the scores in the best 25 out of 40 assignments.

What happens if I miss a Class?

It is recommended that you do not miss a class. In case it is unavoidable, you will have access to an Unedited version of the video recording of the class in the LMS, by the end of the day. The edited version will be posted to the LMS by end of day on Tuesday.

What will be the batch size?

Each lab batch will be of 50 people supported by a mentor. Every Master Class will be limited to 250 people.
What happens if I miss a Lab?

Again, being an intensive program, missing a lab is not recommended. Every week, labs are planned to be for about 5 hours duration on Saturday and Sunday. During these times, there will be support available by way of faculty/TAs, and Chat. Asynchronous support will be available by way of Discussion Forums. In case you miss a lab in unavoidable circumstances, backup lab sessions will be available on Wednesday and Thursday for 2.5 hours each. During this backup lab session, only Chat and Discussion Forum support will be available.

Are there any advanced programs after we complete this program?

This is a Foundation Program. IIIT-H plans to announce series of advanced programs.

How will lab sessions be supported?

The lab sessions will be mentored by experienced AI, ML practitioners and researchers.

Who has enrolled so far?

So far, we have enrollments from professionals working in Accenture, ADP, AMD, Aveva, Bank of America, Cappgemini, Deloitte, DXC, GE, Cenpact, IBM, Infosys, JPMorgan Chase, Microsoft, OpenText, Oracle, Qualcomm, Realfance, Soctronics, Synopsys, TCS, Teradata, Valuelabs, Veriza, Wells Fargo, Wipro, Xilinx and others.

What is the Program Fee?

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<td>Early Bird till Nov 15, 2017</td>
<td>₹1,50,000 + Taxes</td>
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<tr>
<td>Till Nov 30, 2017*</td>
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<td>From Dec 1, 2017</td>
<td>₹2,00,000 + Taxes</td>
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Is the fee refundable?

Registration Fee: Non refundable except in loan cases where the loan is not approved by the financier.

Total Fee: Non refundable.
PSR Prime Tower,
Beside Gate No:1, DLF Cyber City,
Gachibowli, Hyderabad,
Telangana 500032

aiml-advanced-cert@iiit.ac.in