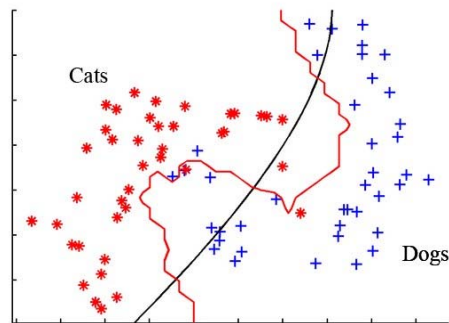
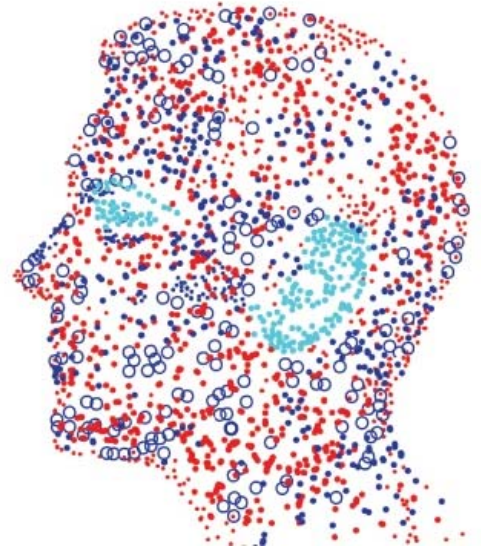
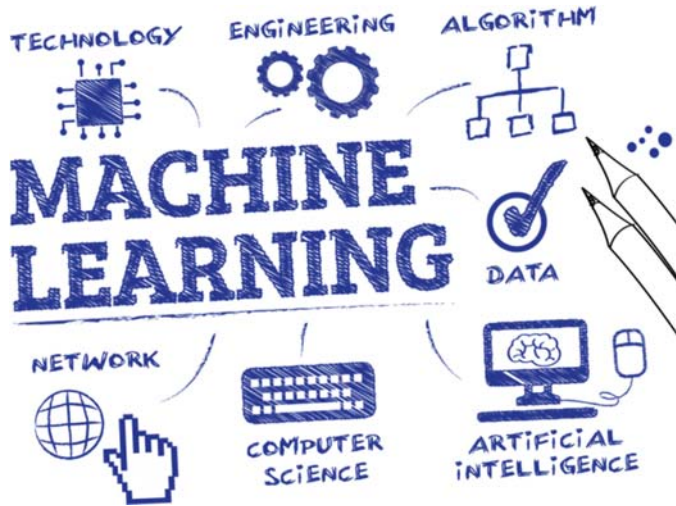


A SHORT TERM COURSE
ON
Machine Learning
(December 13-15, 2018)



Course Coordinators
Prof. Narendra Chaudhari
Prof. Surya Prakash
Prof. Aruna Tiwari
Prof. Ram Bilas Pachori
Prof. Anand Parey



Indian Institute of Technology Indore

About this Course

What is machine learning? You get your introduction to machine learning. After learning the true fundamentals of machine learning, you'll experiment with the techniques that are explained in more detail

You'll learn how to assess the performance of both supervised and unsupervised learning algorithms. Next, you'll learn why and how you should split your data in a training set and a test set. Finally, the concepts of bias and variance are explained.

You'll gradually take your first steps to correctly perform classification, one of the most important tasks in machine learning today. By the end of this chapter, you'll be able to learn and build a decision tree and to classify unseen observations with k-Nearest Neighbors.

Although a traditional subject in classical statistics, you can also consider regression from a machine learning point of view. You'll learn more about the predictive capabilities and performance of regression algorithms. At the end of this chapter you'll be acquainted with simple linear regression, multi-linear regression and k-Nearest Neighbors regression.

As an unsupervised learning technique, clustering requires a different approach than the ones you have seen in the previous chapters. How can you cluster? When is a clustering any good? All these questions will be answered; you'll also learn about k-means clustering and hierarchical clustering along the way. At the end of this chapter and our machine learning video tutorials, you'll have a basic understanding of all the main principles.

This short-term course is aimed at providing the fundamental knowledge of machine learning and machine learning algorithms like neural networks, support vector machines, etc. to the participants. MATLAB based implementation of the machine learning algorithms will be covered.

Course Contents

The **lectures** will cover following topics:

- Basics of Machine Learning
- Bayesian Decision Theory, Parameter Estimation, and Probabilistic Models
- Machine learning algorithms
- Binary and Multi-Class Classification
- Classification
- Concept Learning
- Tree and Rule Models
- Linear Models
- Distance-based Models
- Model Ensembles
- MATLAB implementation of machine learning algorithms
- Case studies on engineering applications: Signal Processing, Vibrations and Gear Faults

Training/Demonstration and Hands-on Sessions

A hands-on sessions of total 3 hours duration will be conducted on machine learning Algorithms.

PROFILE OF THE SPEAKERS:

FACULTY	AREA OF EXPERTISE
Dr. Narendra Chaudhari Professor, Discipline of Computer Science and Engineering, IIT Indore	Machine Learning, Algorithms, Theoretical Computer Science, Network Security
Dr. Surya Prakash Associate Professor, Discipline of Computer Science and Engineering, IIT Indore	Pattern Classification, Bayesian Decision Theory and Parameter Estimation, Image Processing and Computer Graphics
Dr. Aruna Tiwari Associate Professor, Discipline of Computer Science and Engineering, IIT Indore	Soft-computing based classifiers & its performance, Soft-computing based classifiers for big data classification, Machine learning
Dr. Neminath Hubballi Assistant Professor, Discipline of Computer Science and Engineering, IIT Indore	Network Security, Cloud Computing
Dr. Somnath Dey Assistant Professor, Discipline of Computer Science and Engineering, IIT Indore	Human Computer Interaction, Image Processing, Computer Graphics, Biometric Security
Dr Anand Pare Professor, Discipline of Mechanical Engineering IIT Indore	Gear fault diagnosis, dynamic modelling of gear boxes, signal processing of gear vibrations.
Dr Ram Bilas Pachori Professor, Discipline of Electrical Engineering IIT Indore	Signal processing, Time-frequency analysis, Non-stationary signal processing, MATLAB implementation for signal processing
Dr. M. Tanveer Assistant Professor and Ramanujan Fellow, Discipline of Mathematics, IIT Indore	Support Vector Machines, Optimization
Dr. Manish Kumar Goyal Associate Professor, Discipline of Civil Engineering, IIT Indore	Multivariate Statistical Analysis, Machine Learning Models and Data Mining, Irrigation Management and Crop Modeling Applications

COURSE FEE:

Rs. 20,000 (for industry persons)

Rs. 12,000 (for government funded R&D organizations)

Rs. 6,000 (for faculty members)

Rs. 3,000 (for students)

Note: For participants from TEQIP institutes, only expenses for facilities, materials etc. will be charged at the rate of Rs 1500/- per faculty member/student member (any other concession like the group concession will not be applicable for this rate). A certificate to that effect from his/her parent institute signed with seal of TEQIP coordinator on institute letter-head and forwarded by Director/Principal/Vice Chancellor is needed along with the registration form to avail this concession. The course fee includes service tax, study material, breakfast, lunch,

and tea for the entire course duration. In case of non-availability of funds for course fee etc, feel free to contact **Mr. Lalit Jain** E-mail: lalit@iiti.ac.in, **Phone (mobile):** 9993349776.

Group discount: 25% group discount on total fees will be given if more than four participants come from same organization.

MODE OF PAYMENT: SBI Collect through online payment/ bank transfer.

For Online payment/ Bank Transfer

Bank Name: Canara bank

Branch: IIT Indore, Khandwa Road, Simrol, Indore

Account number: 1476101027440

IFS Code: CNRB0006223

ACCOMMODATION

Accommodation on sharing basis can be arranged, if required, in hostel/guest house @ Rs. 500 per day subject to the availability. Limited seats are available. Participants will be selected on first-come-first serve basis. Please send request for hostel accommodation to the course coordinator.

NUMBER OF SEATS: Limited, available on first come first served basis

REGISTRATION FORM

Name : _____

Designation: _____

Institution/Organization: _____

Address: _____

E-mail id: _____

Phone/Mobile No.: _____

Accommodation Required: Yes / No

Online Payment details

UTR number no. _____ Dated _____

Bank _____ Amount (in Rs.) _____

Signature of the applicant with date

IMPORTANT DATES:

The completely filled registration form along with the proof of payment of the course fee should be sent to the following address on or before **07 December 2018 (Friday)**. Scanned copy of the application form along with proof of payment can be also sent to E-mail: lalit@iiti.ac.in (with cc to nsc@iiti.ac.in).

Address for correspondence

Mr. Lalit Jain (Attention Dr. Narendra Chaudhari)

Room No. POD-1D-305 Office of Discipline of Computer Science & Engineering

Indian Institute of Technology Indore, Khandwa Road, Simrol, Indore, MP.

E-mail: lalit@iiti.ac.in, nsc@iiti.ac.in

Phone: 9993349776 (Mobile, Mr. Lalit Jain), 9109022718 (Mobile, Ms. Ujavala Gorakh Langhi)