



Artificial Intelligence & Machine Learning

1-Day Introductory Workshop Blending Theory, Practice, and Applications of AI and ML



iesasonline.org

Breakthrough Proactive Hands-on Learning in Deep Technologies

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A joint Initiative of the **India Electronics and Semiconductor Association (IESA)**, **Morphing Machines**, and **E-Vidya™**

Supercharge your technology career with the E-Vidya™ Intensive Advanced Learning Workshops – a grand alliance initiative to empower Indian technology professionals to re-skill themselves for global success in the 2020s

Workshop Content



- Rapid and lucid introduction to the broad spectrum of topics in AI and ML including the following topics:
- *Introduction to AI – Definition, history, evolution, early AI programs, the AI Winter, resurrection, current upsurge and market hype*
- *Mathematical background, theoretical computer science background, probability theory and statistical techniques*
- *Models and algorithms for knowledge representation and reasoning, clustering and segmentation, principal component analysis, pattern recognition*
- *Search and optimization, planning and scheduling, decision systems, expert systems, reasoning with uncertainty, fuzzy systems*
- *Genetic algorithms and evolutionary computation*
- *Foundations of Machine Learning – supervised and unsupervised learning, reinforcement learning*
- *Neural networks and systems – biological brains, artificial neural networks (ANNs), perceptron, back-propagation algorithm, advanced neural net models*
- **Deep Learning** – models, algorithms, and applications, platforms, tools, and APIs
- *AI applications – Text processing, NLP, signal processing, audio processing, speech recognition and synthesis, image processing, object recognition, computer vision, video analytics, face recognition, data analytics, time series analytics, streaming data analytics, robotics, autonomous vehicles*
- *Tools, APIs, platforms – Machine Learning using **Python, Keras, Tensorflow, Theano, Caffe, Chainer***
- *High-performance AI and ML – Use of CPUs, GPUs, FPGAs, custom accelerators, parallel, reconfigurable, and distributed computing in AI and ML*
- *Challenges – limitations of AI, ethical AI, explainable AI, dangerous AI, edge AI and IoT, emerging technologies*
- *AI and ML career prospects and job opportunities – AI/ML jobs and broader data sciences and analytics jobs*

Objectives

- To gain broad insight into the AI and ML landscape beyond the market hype
- To gain high level understanding of the architectures, algorithms, platforms, APIs, and libraries for AI/ML development, current and future AI/ML application domains, and domain-specific models and algorithms
- To gain pragmatic understanding of career prospects and emerging opportunities in AI/ML and how to prepare for them

Workshop Structure and Schedule

- **1-day workshop** – Total of 8.5 hours of structured lectures, open interactions, and breaks

Session	Content
Session 1 0900 – 1030	Introduction, history, definition, theoretical background
Break 1	
Session 2 1100 – 1300	Models and algorithms, search and optimization, genetic algorithms
Lunch Break	
Session 3 1400 – 1530	Machine Learning, neural networks, deep learning
Break 2	
Session 4 1600 – 1730	AI and ML tools, APIs, platforms, applications, careers in AI / ML

Who Should Attend

- Working technology professionals, graduating students, team leaders and managers of AI/ML projects, senior managers and business leaders – anyone seeking a rapid yet lucid overview of all that AI and ML are really about and the professional opportunities they open up

Background and Prerequisites

- Basic undergraduate level science and mathematics, familiarity with core computer science subjects, and programming or relevant industry experience

More information on E-Vidya™ Intensive Advanced Learning Workshops at <https://e-vidya.in>



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About the Instructor

- **Dr. Chandan Haldar** is an applied computer scientist and an industry leader with several decades of cutting-edge research, development, and management experience in top academic institutes, global computer corporations, and deep technology start-up ventures
- He is alumni of IIT Kharagpur, IISc Bangalore, and the London Business School, with expertise in AI and Machine Learning, Parallel and Distributed Computing, Functional Programming, and Embedded AI
- Dr. Haldar is CEO of **Morphing Machines** and Chief Scientist of an exclusive private research lab – **TISRA™ (Terra Incognitus Systems Research Alliance)**

About the E-Vidya™ Workshop Series

- The *E-Vidya™ Intensive Advanced Learning Workshops Series* focuses upon selected deep technologies that are likely to rule the technology world in the 2020s:
- **Artificial Intelligence and Machine Learning**
- **Quantum Computing Theory and Applications**
- **Block Chain Technology and Cryptocurrencies**
- **Digital Design using Chisel, Scala, and RISC-V**
- **Functional Programming Theory and Practice**
- **Advanced Programming in Haskell, Ocaml, Rust, Julia, Scala, Erlang, Elixir, and Clojure**
- Condensed 1-day introductory workshops, standard 3–5 day comprehensive workshop, and customized trainings of flexible durations on specific sub-topics are available
- *E-Vidya™ Intensive Advanced Learning Workshops* are designed to provide concise and lucid introductions to the core concepts of the subject, together with hands-on exposure to the key techniques, tools, platforms, and APIs for software and system development
- More information at <https://e-vidya.in> or by email at evidya@morphing.in

Follow-through Workshop

- The natural sequel to the 1-day workshop is the **5-day E-Vidya™ Intensive Advanced Learning Workshop on Artificial Intelligence and Machine Learning**
- The comprehensive 5-day workshop covers these topics in depth – including hands-on sessions on application development in AI/ML using common APIs and platforms
- Participants of the 5-day Workshop receive certification in collaboration with top academic partner institutions

About Morphing Machines

- Leading Indian fab-less semiconductor company launched from the Indian Institute of Science Bangalore
- Creates cutting-edge silicon and software IPs for AI, ML, cryptography, face recognition, numerical computing, other high-performance computing applications, and RISC-V ISA based processor and accelerator platforms
- Inventors of **REDEFINE™** – scalable, customizable, reconfigurable, power optimizing massively parallel processor architecture and many-core SoC platform
- More information at <http://morphing.in>

About IESA

- **India Electronics and Semiconductor Association (IESA)** is the premier trade body committed to the development of a vibrant Indian Electronic System Design and Manufacturing (ESDM) ecosystem
- IESA works through a variety of collaborative activities, together with the entire spectrum of stakeholders of the ESDM ecosystem from governments to private sector
- IESA represents its membership covering a large and expanding section of ESDM companies in India, ranging from large multinational and Indian companies to young fab-less semiconductor start-up companies
- More information at <http://www.iesaonline.org>



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