Defence Institute of Advanced Technology (DU)

An Autonomous Organization funded by
Department of Defence Research & Development,
Ministry of Defence, Government of India

An OnlineTraining & Certification Programme by Defence Institute of Advanced Technology (DIAT)

DIAT CERTIFIED ARTIFICIAL INTELLIGENCE PROFESSIONAL

Course framework

Module -1 Probability Theory and Pattern Recognition
Module -2 Machine Learning & Deep Learning
Module -3 Computer Vision
Module -4 Big Data Analysis and Algorithms
Module -5 Natural Language Processing
Module -6 Augmented Reality

12 weeks online course on Artificial Intelligence & Machine Learning
120 contact hours
[2 hours/day & 5 days/week]

CONTACT US AT: diataiml@gmail.com

REGISTER AT: https://forms.gle/ngYR78hzXjs9yeTp6

Genesis of the Course

AI is being elevated constantly for some time and is being considered as a revolution in the whole IT field. Thereis a strong need for AI professionals who are skilledto deliver state-of-the- art AI solutions. The objective of the course is to impart the essential knowledge of AI and ML to serve the needs of multidisciplinary research ongoing in different researchlabs and industries in the country.

Structure of the Course

The training and certification course is a 12 weeks online course offering a mix between fundamentals and advanced topics of AI & ML such as Probability Theory, Pattern Recognition, Big Data Analytics, Computer Vision, Natural Language Processing, Augmented Reality, Deep Learningand related advancements in the domain.The syllabus is designed by leading academicians and AI experts from DRDO.

Important Dates

- **Last date of Registration : 25 May 2023**
- **Last date of payment of fees: 05 June 2023**
- **Commencement of Course: 12 June 2023**

Registration Link:

https://forms.gle/ngYR78hzXjs9yeTp6

Certificate

The entrancetest ensures the qualification for enrolling in the course.
DIAT CertifiedArtificial Intelligence Professional will be awardedafter successful completion, to claim your state-of-the-art skill set.

Target Audience

Graduates from any discipline aiming for a successful careerin Artificial Intelligence and Machine Learning. IT professionals who wish to enhance their AI skills, Officers from Tri-services, R&D professionals, or anyone who wants to develop expertisein the field of AI. Students pursuing graduation may apply.

Advisors

- Dr. CP Ramanarayanan, VC, DIAT
- Dr. Subrata Rakshit, DRDO
- Dr. Manisha J. Nene, Director, SoCE&MS, DIAT
- Shri. Shailesh Chansarkar, DRDO

Fees Details

Fees for the Course: **Rs. 29,500/- (including GST @18%)**

Online mode of course. Learn from anywhere, withoutleaving your home or your job.

Eligibility

Graduate from any discipline. Students from final year may apply.

Prerequisite for the course- Syllabus

- Modular Mathematics, Statistics, Probability theory
- Basics of Algorithms, Databases, Data structures
- Knowledge of any Programming Language

Be prepared to learn the advanced skillsand sharpen your edge.

Trainers

The training sessions are offered by the leading academicians, experts from DRDO, national and international AI professionals from industry and AI think tanks.

CONTACT US

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https://www.diat.ac.in/online-certificate-courses/

dataiml@gmail.com

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Syllabus Details

Probability Theory and Pattern Recognition:

Basic probability and measures of dispersion, Random Variable,Probability function and Joint probability function
Binomial and Poisson distribution, Normal distribution, Application to learning using Bayesian method, Introduction to Pattern Recognition Systems, Classification, Types of Classification, Linear and Non-Linear Classification, Dimensionality Reduction & Feature Selection Methods: Linear Discriminant Analysis and Principal Component Analysis, Introduction to Clustering, Algorithms: Distance-Based Clustering: Distance-based and Density-based, PredictiveModelling, Case Studies.

Machine Learning & Deep Learning:

Introduction to AI, ML & Deep learning, Methods and Conceptsfor AI & ML, Artificial Neural Networks: Basicsof Neuron, Perceptron, Multilayer Neural Network, Back-propagation Algorithm; Introduction to Deep Neural Networks, Convolutional Neural Networks, Image Classification using CNN, Recurrent Neural Networks & Auto-encoders, Generative Adversarial Networks (GANs).

Computer Vision:

Introduction to Image processing techniques; Images, Noise, Convolution, Filtering; Thresholding techniques, Image segmentation; Edge Detection techniques, Interest Point Detection, Harris Corner Detector, SIFT, Histograms of Oriented Gradients; Binary shape analysis, connectedness, object labelling and counting; Boundary tracking procedures, active contours; Boundary descriptors, chain codes, Fourierdescriptors, region descriptors, moments
; Hough Transform; Optical Flow, Motion Models, Global Motion, KLT Tracking, Mean-Shift Tracking; Deep Sort; Camera Model and Calibration; Fundamental Matrix, Stereo Images; 3 D Image processing; Face Recognition based on video; Human activity detection based on video; Medical Image Segmentation.

Big Data Analysis and Algorithms:

Big data & Demo Hadoop-I, Hadoop Ecosystem & Demo Hadoop-II, HDFS and YARN with Demo on Spark HDFS, MapReduce with Demo on HDFS Part I, DS in MapReduce with Demo on YARN Part I, Hive- Part I with Demo on MapReduce Part I, Hive- Part II with Hive Demo, Types of Data Formats and Case study.

Natural Language Processing:

Word discovery from real situations, Aligning unsupervised syntax with sensory structures, Machine Translation, Knowledge Discovery Graphs, NELL (Never- Ending LanguageLearning), Case-Studies etc.

Augmented Reality:

Background, Motivation, Introduction, Software/Hardware, Geometry of Models, Visual Perception, Visual Rendering, Tracking Algorithms AR Tutorial for Android Devices, Motion in Real and Virtual Worlds,Application Design and development, Labs on AR/VR Hardware & Software, AR/VR Tutorial for Android devices and Google Cardboard, Unity3d Vuforia, ARkit, AR/VR Game Development, VirtualTour creation.

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