

Bhaskaracharya Pratishthana

Certificate Course in Deep Learning and Generative AI

6th July 2024 to 5th October 2024



About Bhaskaracharya Pratishthana

Bhaskaracharya Pratishthana is a Pune based Mathematics Institute founded in 1976 by the world famous Indian Mathematician **Prof. Shreeram Shankar Abhyankar** for conducting research in Higher Mathematics. Since 1992 the Pratishthana has also been a recognised centre for conducting Regional Mathematics Olympiad (RMO) under the National Board for Higher Mathematics (NBHM) for Maharashtra and Goa Region. Pratishthana holds annual /bi-ennial conferences/Workshops in some research areas in higher mathematics attended by Indian/Foreign PhD students, scholars and Professors. The Pratishthana has organised a number of Workshops for research students and college teachers under the aegis of NBHM/NCM. The National Board for Higher mathematics and DAE have greatly helped Pratishthana to enrich its library and for organising mathematical activities. The Mathematics Department of S. P. Pune University and IISER, Pune have rendered active co-operation in holding Conferences/Workshops. The teachers from various colleges in Pune as well as researchers from institutions all over India have supported the activities at BP over a long period of time. From 2021, the Pratishthana has started a Centre for Industrial Mathematics. Various application-oriented courses have been introduced under this centre with the cooperation of many industries. This is expected to lead to industrial research with the use of Mathematics.

Deep Learning and Generative AI

Deep learning (DL), a branch of machine learning (ML) and artificial intelligence (AI) is nowadays considered as a core technology of today's Fourth Industrial Revolution (4IR or Industry 4.0). Due to its learning capabilities from data, DL technology originated from artificial neural network (ANN), has become a hot topic in the context of computing, and is widely applied in various application areas like healthcare, visual recognition, text analytics, cybersecurity, and many more. However, building an appropriate DL model is a challenging task, due to the dynamic nature and variations in real-world problems and data.

Generative AI or generative artificial intelligence refers to the use of AI to create new content, like text, images, music, audio, and videos. Generative AI is powered by foundation models (large AI models) that can multi-task and perform out-of-the-box tasks, including summarization, Q&A, classification, and more. Plus, with minimal training required, foundation models can be adapted for targeted use cases with very little example data.

Institute Collaborations

Bhaskaracharya Pratishthana has signed Memorandum of Understandings (MOU) with several Colleges and Universities to jointly organize conferences, lectures and workshops to collaborate in areas of Pure and Applied Mathematics.

About the Course

In this particular Certificate course, our aim is to set the foundations required for the two fields. Along the way, we will also explore applications and practical implementations of the two subjects via several case studies. The overall course will be graded and regular assignments will be provided along with a final (MCQ) examination to determine the overall grade.

The course will be conducted for a time span of 36 hours

Key topics to be discussed in the course are

- **Revision of Python Programming -(3 hours)**
- **Mathematical & Statistical Foundations- (9 hours)**
- **Introduction to Deep Learning Concepts and Neural Networks-(6 hours)**
- **Advanced Deep Learning Architectures- (9 Hours)**
- **Introduction to Generative AI-(9 Hours)**

Course Instructors

- **Dr. S.A. Katre:** Professor & Custodian, Bhaskaracharya Pratishthana
- **Mr. Hrishikesh Khaladkar:** Course Coordinator and Faculty, Department of Mathematics, Fergusson College
- **Dr. Tushar Deshmukh:** Associate Professor, Deccan Education Society Pune University
- **Mr. Abdul Aleem Heroli:** Senior Data Scientist, Omneky Solutions Private Limited, United States
- **Mr. Sahil Kavitate:** Data Scientist, Algo Analytics Private Limited

Course Eligibility

The Course is meant for any interested student looking up to do a project in this area. No specific degree constraints are required. However it is expected to have a keen interest in Mathematics, Coding and Machine Learning. At least we expect some basic level background in Python Programming as we will only touch Python Basics in our starting session to get in synchronization with coding skills. A background in Mathematics/Computer Science will be advantageous. **Any Industry/Academic personal from any field interested to explore can also join the course.**

Course Logistics & Timings

- The Course will be conducted **only on Saturdays from 3 pm to 6pm** starting from 6th July 2024. The total duration of the course will be 12 Saturdays from the starting date. The mode of the course will be hybrid. However final decision regarding the timings will be confirmed in the inaugural session on the 6th July 2024.
- **The inaugural session will be conducted on the 6th July 2024 which will be a informal introduction to the institute, course and the teaching faculty at Bhaskaracharya Pratishthana at 4pm.** Everyone interested Candidate is expected to register mentioned in the **Contact Details** below .
- The fees for the course will be as per the following structure. The details regarding the payment of the fees will be provided in the inaugural session.
 - ₹7000 for students/Faculty coming from Academic Institutions
 - ₹9000 for Industrial Personal
- P sets (Problem sets) will be uploaded at the end of each week for practice purpose which need to be submitted before the next session. A final examination will be conducted at the institute which will be in MCQ format. The combined scores will decide the overall grade.
- The course material will be uploaded on the drive for reference and students will be provided access
- Every student is expected to carry his own laptop for a hands on during the session. Internet and Wi-fi facility is available at the institute for use if required. In case of online candidates a link will be shared to you every week to join from your available location.
- We will encourage people to attend this program in classroom mode as far as possible to have a better interaction.
- A Certificate will be provided on the successful completion of the Course

Contact Details

For any Queries regarding the course kindly contact

- Mr. Hrishikesh Khaladkar
Mobile No: 8149432374
Contact Email: hrishi.paradox@gmail.com

Note : You will receive the a Copy of the Syllabus on your Email once you register on the google link

<https://shorturl1.at/tvGFa>