



ଗଣିତ ଓ ପ୍ରୟୋଗ ପ୍ରତିଷ୍ଠାନ
ରୌପ୍ୟଜୟନ୍ତୀ କର୍ମଶାଳା

'କୃତ୍ରିମ ମେଧା ଏବଂ ଗଣନାର ଗାଣିତିକ ଦିଗ'

ନଭେମ୍ବର ୨୫, ୨୦୨୪(ସୋମବାର) ଠାରୁ ନଭେମ୍ବର ୩୦, ୨୦୨୪(ଶନିବାର) ପର୍ଯ୍ୟନ୍ତ

INSTITUTE OF MATHEMATICS AND APPLICATIONS
SILVER JUBILEE YEAR WORKSHOP

'MATHEMATICAL ASPECTS OF AI AND COMPUTING'

During 25th November 2024 (Monday) to 30th November 2024 (Saturday)

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ଗଣିତ ଓ ପ୍ରୟୋଗ ପ୍ରତିଷ୍ଠାନ
(ବିଜ୍ଞାନ ଓ କାର୍ଯ୍ୟକ୍ରମ ବିଭାଗ, ଓଡ଼ିଶା ସରକାର)
ଭୁବନେଶ୍ୱର - ୭୫୧୦୨୯

INSTITUTE OF MATHEMATICS AND APPLICATIONS

(Science & Technology Deptt. Govt. of Odisha)

BHUBANESWAR - 751029

Chief Patron

Sh. Krushna Chandra Patra
Hon'ble Cabinet Minister
Science & Technology, Govt. of Odisha

Patron

Smt. Chithra Arumugam, IAS
Principal Secretary
Science & Technology Department, Govt. of Odisha

Organizing Chairman

Prof. Jasobanta Jena
Director
Institute of Mathematics and Applications
Bhubaneswar

Organizing Secretary

Dr. Trailokya Panigrahi
Associate Professor
Institute of Mathematics and Applications
Bhubaneswar

Local Organizing Committee

Dr. Pinakadhar Baliarsingh, Associate Professor, IMA
Dr. Sudhakar Sahoo, Assistant Professor, IMA
Dr. Kishore Kumar Dash, Guest Faculty, IMA
Dr. Anasuya Nath, Assistant Professor, Utkal University

Technical Committee

Prof. A. K. Ojha, IIT Bhubaneswar
Prof. Pramod Kumar Das, Guest Faculty, IMA
Mr. Indra Bate, Assistant Professor, IMA
Dr. Debopriya Mukherjee, IIT Indore

About the Institute:

The Institute of Mathematics and Applications was established by the Government of Odisha in the year 1999, vide the Resolution of the Government of Odisha, Science and Technology Department letter no. 368-ST-I (SC) – 159/98 dated 31st May 1999 with wide ranging aims and objectives as notified in the Gazette No. 18, July 23, 1999/SRAVANA, 1, 1921. The Institute has been registered on 28th March 2000 under provision. In the last several years since its inception, consistent with its aims and objectives, it has been active in searching and nurturing talents in mathematics by organizing training and interactive camps for successful students in various mathematical Olympiad tests. It has engaged itself in exploring the applicability of mathematical ideas in exotic areas of studies besides its engagement in traditional research in various disciplines of mathematics. At present IMA offers three courses namely B.Sc. (Hons.) in Mathematics and Computing, M.A./M.Sc. in Mathematics with Computational Finance and M.A./M.Sc. in Mathematics with Data Science. It is worthy to mention here that IMA is recognized as one of the Nodal Centre for research by the Utkal University.

Aim of the Workshop:

To serve the participating Faculty Members, Industry Personnel, Researchers as well as Students of different corners of country having enthusiasm to understand the intricate aspects of data, its authenticity and have certain learning tools to labelled the data and predict its future pattern and also develop new advanced robotics for optimized security system using acquired mathematical ideas.

Outcome of the Workshop:

- i) To understand the intricate aspects of data to identify its pattern for making suitable clustering and classifications with help of certain statistical techniques.
- ii) To discover the patterns of the various data and then make prediction based on the complex findings to answer business questions, detect and analyses the recent trend in the market to solve problems.
- iii) Maintaining the integrity of the data by ensuring nothing is altered and keeping data confidential and available only to the intended users, authenticating the identity of the users.
- iv) The main goal is to use statistical learning tools to train a model on historical, labeled data in order to predict the value of some quantity on the basis of new data item for which the target value or classification is unknown.

Topics to be covered:

- Probability and Statistics.
- Numerical Linear Algebra.
- Cryptography.
- Mathematics for Machine Learning (Linear Regression, Dimensional Reduction, Principal Component Analysis, Logic and Optimization).
- Artificial Neural Networks (ANN) and Convolutional Neural Networks (CNN).
- Generative AI.
- Natural Language Processing (NLP).

Mode of Presentation:

- More than half of the total number of sessions will be for learning the required advanced mathematical ideas on Probability and Statistics, Numerical Linear Algebra, Cryptography, Mathematics for Machine Learning, Neural Networks, Generative AI and NLP.
- Some Case Studies based on the Mathematical Aspects of AI and Computing thereof will be discussed.
- Some of the sessions are meant for Quizzes and Problem Solving on Mathematics for AI and Computing.

Resource Person:

- 1) Prof. Manoranjan Satapathy, IIT Bhubaneswar
- 2) Prof. Debi Prasad Dogra, IIT Bhubaneswar
- 3) Prof. Ram Prasad Padhy, IIT Bhubaneswar
- 4) Prof. Abhik Jana, IIT Bhubaneswar
- 5) Prof. Shreya Ghosh, IIT Bhubaneswar
- 6) Prof. Indrajit Jana, IIT Bhubaneswar
- 7) Prof. Akash Ashirbad Panda, IIT Bhubaneswar
- 8) Prof. Bankim Chandra Mondal, IIT Bhubaneswar
- 9) Prof. Neelam Saikia, IIT Bhubaneswar
- 10) Prof. Ratikanta Behera, IISc Bengaluru

Eligibility:

Any of the following categories can participate in the workshop.

Category-A : Faculty in any Institution/University or Personnel working in any user industry of the country.

Category-B : Research Scholar/PDF working in any Institution/University.

Category-C : PG student in any Institution/University/College of the country.



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Registration Fees:

- Category-A: Rs 3000/-
- Category-B: Rs 2000/-
- Category-C: Rs 1000/-

Bank Details:

Registration fee can be deposited in the following bank account of IMA

Bank Name : Canara Bank
Name of the Beneficiary : Director, Institute of Mathematics & Applications, Bhubaneswar.
Bank Account Number : 80172010000580
Bank IFSC Code : CNRB0018017

Accommodation:

Lodging and boarding facility to the needy participants will be provided on add-on payment basis. The extra payments shall be calculated as per the information submitted during application.

How to apply:

Interested candidates may fill up the registration form and send the scan copy of filled in form along with copy of Id proof to the email_Id: trailokya.ima@iomaorissa.ac.in

Last date for submission of registration form:

November 16, 2024 (Saturday), 6:00 PM

Note: Selected candidates are required to bring their own laptops for hands-on computation.

Contact Details for the Workshop

Dr. Trailokya Panigrahi
Organizing Secretary
IMA SILVER JUBILEE YEAR WORKSHOP
"MATHEMATICAL ASPECTS OF AI AND COMPUTATION"
Institute of Mathematics and Applications
Bhubaneswar -751029
Odisha, India
Email Id: trailokya.ima@iomaorissa.ac.in
Phone Number: 8327777913



**IMA SILVER JUBILEE YEAR WORKSHOP:
“Mathematical Aspects of AI and Computing”
[25th November 2024 – 30th November 2024]**

REGISTRATION FORM

Name
(In Block Capital Letter) : _____

Category of the Participant
(For category details please refer the
brochure) : _____

Designation and Department : _____
Name of the
Institution/University/College/Industry : _____

Address for Correspondence : _____

Valid Mobile Number : _____

E-Mail Id : _____

Accommodation needed
(Please Mention Needed/Not-
Needed) : _____

Date and Time of Arrival : _____

Amount of Registration Fee deposited : _____

Registration fee deposit transaction
number, date and time if it is online
mode of payment/Draft Number with
Date : _____

Date: _____

Signature _____