

## INTRODUCTION.

A strong Mathematical foundation is essential for Machine Learning (ML). An expert in ML with a strong base in Mathematics is an ideal resource person to teach the necessary math for ML.

Thus, in this workshop, experts in Mathematics with a sound knowledge of ML will give insights of math in ML. In one-week a participant will have the opportunity to learn the following:

- The math concepts such as Linear Algebra, Probability, Distributions, Higher dimensional Calculus and Optimization;
- The methodology for ML;
- The algorithms;
- The computational aspect of the algorithms;

The numerous applications in Engineering field are well be explored during the sessions by the experts which includes Image Recognition, Speech Recognition, Self Driving cars, Product recommendation, medical diagnosis etc.. Finally, the realization of a problem will be established.

## Course topics

- Mathematical Foundation  
Linear Algebra  
Dr. Sivaram Ambikasaran, IITM
- Probability and Distributions  
Dr. Neelesh Upadhye, IITM
- Higher Dimensional Calculus (Vector Calculus)  
Prof. Manam Srinivasa Rao, IITM
- Optimization  
Prof. V. Vetrivel, IITM
- Machine Learning Technique / Problems  
Prof. S. Sundar, IITM, NIT, Mizoram
- Applications of ML to Engineering Systems  
Dr G V E Satish Kumar

## Resource Persons.

**Dr. Sivaram Ambikasaran** as an Assistant Professor in Department of Mathematics, IIT Madras is a Ph. D from Stanford Engineering from IIT Madras. His research areas are Fast Algorithms, Numerical Linear Algebra, Approximation Theory, Data Estimation, Computational Statistics.

**Dr. Neelesh Upadhye** is an Associate Professor in the Department of Mathematics, IIT Madras. His PhD is from IIT Bombay. He has a demonstrated history of coding in the higher education industry. He is skilled in mathematical modelling, R Stochastic Modeling and statistical Modeling.

**Dr. Manam S.R** is a Professor in Department of Mathematics at IIT Madras. He obtained his Ph.D. from IISC Bengaluru and his research interests are Differential and Integral Equation and hydrodynamics.

**Dr. Vetrivel** is Professor and Head of Department of Mathematics, IIT Madras. His research areas are Non-Linear analysis, Variational in qualities, Optimization and fixed-point theory.

**Dr. S. Sundar** is at present Director, NIT Mizoram, Professor, IIT Madras. He is a DAAD Ambassador (German Academic Exclusive Service) His Research areas are Numerics for PDES Mathematical Modeling and Numerical Simulation.

**Dr. G V E Satish Kumar** is presently Professor and Head of Department of EEE Gayatri Vidya Parishad College of Engineering (Autonomous). His areas of work are Distributed Generation and Design of Robust Controllers for EV charging Systems.

## Contact for more Information.

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## Organizing Committee.

### Chief Patron

Prof. Dr. Ing. P. S. Rao, President, GVP

### Patrons:

Sri D. Dakshina Murthy, Vice-President, GVP

Prof. K.P.R. Sastry, Vice-President, GVP

Prof. P. Somaraju, Secretary, GVP

Prof. P.V. Sarma, Member, Secretary, GVPCDPGC(A)

### Chairman:

Prof. A. B. Koteswara Rao, Principal

### Conveners:

Dr. J. Vasundhara Devi

Dr. G V E Satish kumar

### Co-Conveners:

Ms J Usha Rani

Ms V Chandrika

### Coordinating Committee:

- Dr. C V K Bhanu
- Dr T S Sirish
- Dr. O V S R Vara Prasad
- Dr. J Ramesh Rahul
- Mr A S R Sekhar
- Ms A Susmitha
- Ms K Hemalalitha
- Mr P K Das
- MS G Vanitha



### Venue.

Departments of Electrical and Electronics  
Gayatri Vidya Parishad College of Engineering  
(Autonomous) Madhurawada, Visakhapatnam.

## Who Can Attend The Workshop?

Students and Faculty of Electrical and Electronics , Mathematics and CSE with considerable knowledge of coding in C or C++ , Mat lab.

## Registration Fees.

All participants must pay an Amount of Rs **1000/-**

## About the Institution.

The Gayatri Vidya Parishad College of Engineering has a 5000 strong contingent of students pursuing quality and skill oriented education. The college is established by 'Gayatri Vidya Parishad'(GVP), a non-profitable organization comprising of noted educationists and eminent philanthropists who have a missionary zeal to provide quality technical education. The college is one of the most- preferred self-financing engineering colleges in Andhra Pradesh and at present offers 10 B.Tech. Programs, 9 M.Tech. and one MCA Program approved by AICTE. The college has brought in many initiatives for the benefit of students with autonomous status granted by UGC in 2009 and extended up to 2025. The institute has been reaccredited second time by NAAC with 'A' grade with CGPA of 3.47/4.0. All the eligible seven B.Tech. programs are accredited by NBA at least twice. The institute received funds to the tune of Rs. 5 Crores under Technical Education Quality Improvement Program (TEQIP), S.C-1.2. The college received Rs. 12 Crores from funding organizations AICTE / DST / NBHM / ARB etc. towards 45 R&D projects.

## Dept of Electrical and Electronics Engineering

The Department of Electrical & Electronics Engineering (EEE) was established in the year 1996. The department offers a B.Tech and an M.Tech Programme. Highly qualified and experienced faculty with 8 doctorates and 12

pursuing Ph.D. from reputed institutes are the strength of the department. The Department has 10 state of the art laboratories with a total investment of more than Rs. 3.5 Crores. The department undertakes consultancy projects for industries and actively involved in various research projects worth Rs. 2.63 Crore funded by MNRE, AICTE, HBL Hyderabad and other organizations.

## GVP-LIAS.

Gayatri Vidya Parishad Professor V. Lakshmikantham institute for advanced studies (GVP-LIAS) organize seminars/ workshop / conference every year. GVP-LIAS in association with the departments of GVP-College of Engineering organized four international conferences titled, "Recent Advances in Mathematical Sciences and Applications (RAMSA)" in 2009, 2013 2017 and 2021. GVP-LIAS boasts of hosting a good number of distinguished Mathematicians, Scientists and Researchers from various parts of the country and from abroad.

## VISION OF THE DEPARTMENT

- To be a Center of High Quality Education and Research in the field of Electrical and Electronics Engineering.

## MISSION OF THE DEPARTMENT

- To impart high quality education and enhance students' skills to meet the upcoming needs by introducing concurrent trends in curriculum and through collaborative industry-institute interaction.
- To promote creativity and innovation among faculty and students through development of research facilities.
- To mould the students into responsible citizens with social, ethical and environmental awareness.



COLLEGE OF ENGINEERING  
(AUTONOMOUS)

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Accredited by NAAC with 'A' grade with CGPA of  
3.47/4.00 Madhurawada, Visakhapatnam

Centenary Year of

Prof. V. Lakshmikantham (16-03-2023 to 16-03-2024)

## High End Workshop on MATHEMATICAL TOOLS OF MACHINE LEARNING FOR ENGINEERING APPLICATIONS (MTMLEA) (KARYASHALA UNDER THE Accelerate Vigyan Scheme - A SERB Initiative)



11<sup>th</sup> Dec – 17<sup>th</sup> Dec 2023

Organized by

Departments of Electrical & Electronics  
Engineering  
In Association With

Gayatri Vidya Parishad

Prof. V. Lakshmikantham Institute  
for Advanced Studies (GVPLIS)