

National Institute of Technology Tiruchirappalli
 Department of Electronics and Communication
 Engineering
 One Day Tutorial on
**Machine Learning, Deep Learning and
 Computational Intelligence**

May 12, 2020

Who should attend?

All UG, PG, research scholars and faculty who are interested in machine learning, deep learning, computational intelligence and their applications.

Tutorial “ML, DL, and Computational intelligence” is based on the book “Pattern Recognition and The Computational Intelligence”, 2019, Transactions on computational Science and intelligence, Springer

publications authored by Dr.E.S.Gopi, Co-ordinator for the event MDCWC 2020. He is also the Guest speaker for the IEEE Training School on Machine Learning for Wireless Communication [Link](#)

Objective of the workshop

The Tutorial consists of series of lectures, followed by Tutorials using MATLAB, focused on the state-to-the-art techniques on Machine learning, Deep learning and Computational intelligence.

Important details:

- Last date for Tutorial registration: **20th March 2020**
- Registration fee: **Rs.1000/-** (Including GST) in the form of DD in favor of "The Director, NIT Tiruchirappalli" (payable at Tiruchirappalli).
- Registration is complete once we receive the hard copy of the Demand Draft and the Google form is submitted. **FIRST COME FIRST SERVE BASIS**

Link to the Google form: [Click Here](#)



[Link](#)

Tentative Schedule

Machine Learning (9am to 10.30am)

- Dimensionality reduction techniques
- Multiple input , Multiple output Linear regression
- Probabilistic discriminative model
- Probabilistic generative model (HMM,GMM)
- Support Vector Machine

Break (10.30am to 10.45am)

Deep learning (10.45pm to 12.45pm)

- Multilayer perceptron
- Boltzmann Machine
- Auto-Encoders
- Convolutional Neural Network
- Recurrent Neural Network
- Generative Adversarial Network
- Deep Reinforcement Learning

Lunch Break (12.45pm to 2pm)

Computational intelligence (2pm to 3pm)

- Particle Swarm Optimization
- Ant colony techniques
- Social Emotional Optimization Algorithm
- Social Evolution and Learning Optimization

Break (3pm to 3.15pm)

Hands on session using Matlab (3.15pm to 5.30pm)

Call for Papers

For Workshop on Machine Learning, Deep Learning and Computational Intelligence for Wireless Communication (MDCWC2020)

May 11-13, 2020

Objective of the workshop

Due to the feasibility of collecting huge data from mobile and wireless networks, there are many possibilities of using Machine learning, Deep-learning and the Computational Intelligence to interpret and to hunt knowledge from the collected data. The workshop aims in consolidating the experimental results integrating the Machine Learning, Deep Learning and Computational Intelligence for Wireless Communication.

The workshop invites original research contributions/survey paper under the following categories.

- (1) The data driven wireless communication applications using ML, DL and Computational intelligence.
- (2) Optimization algorithm/technique for ML, DL and Computational intelligence.
- (3) Related mobile data applications.
 - Survey/Review papers will also be accepted.
 - Virtual Presentation is also allowed. For details, please visit [workshop website](#).

Topics

Machine Learning

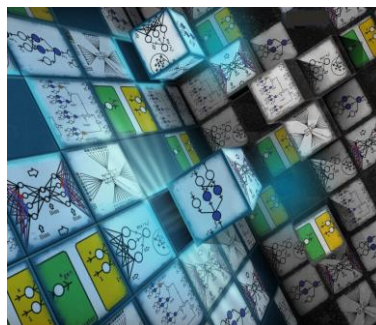
- Multiple input multiple Output regression
- Probabilistic discriminative approach
- Multi-class Logistic Regression
- Probabilistic generative model
- Support Vector Machine
- Dimensionality reduction Techniques.

Deep Learning

- Multilayer perceptron
- Boltzmann Machine
- Auto-Encoders
- Convolution Neural Network
- Recurrent Neural Network
- Generative Adversarial Network
- Deep Reinforcement Learning

Optimization algorithm

- SGD
- Nesterov's momentum
- Adagrad
- Adadelta
- RMSprop
- Adam



Computational Intelligence

- Particle Swarm Optimization
- Bacterial Foraging
- Simulated Annealing
- Ant Colony Technique
- Genetic algorithm
- Social Emotional Optimization Algorithm
- Social evolutionary Learning Algorithm

Mobile data applications

- Mobile health care
- Mobile pattern recognition
- Natural language processing
- Image processing.

Wireless Communication

- Network prediction, Traffic classification, Call detail record mining
- Automatic speech processing
- Mobility Analysis, Indoor Localization
- Energy minimization, Routing, Scheduling, Resource allocation, Multiple access, Power control
- Malware detection, Cyber security, Flooding attacks detection, Mobile apps sniffing
- MIMO detection, Signal detection in MIMO-OFDM, Modulation recognition
- Channel Estimation, MIMO nonlinear equalization,
- Super-resolution channel and direction of arrival estimation.
- NOMA, mm-Wave channel model, Full duplex. OFDM/FBMC. NB-IO

Important Dates

Paper Submission: **20th March 2020**
(Hard deadline)

Acceptance

Notification: **2nd April 2020**

Camera ready submission and registration: **15th April 2020**

Registration Details

Type of registration	Fee	Benefits	Link
Author(all 3 days)	₹ 6000/-	<ul style="list-style-type: none">• Access to keynotes• Slot for oral presentation• Author workshop kit• Publication of selected papers• One day tutorial• Lunch	Payment through SBI Collect (State Bank of India) Link
Participants(all 3 days) ➤ Participants(all 3 days) (before March 15 th 2020) for three attendees ➤ Participants(all 3 days) (March 15 th to April 15 th 2020) per attendees	₹6000/- ₹ 3000/-	<ul style="list-style-type: none">• Access to keynotes• Participants workshop kit• One day tutorial• Lunch	

***Registration is complete once the Google form is submitted.**

Google Form Link for registration:

❖ **Author:** <https://forms.gle/YdVUeWcsfAYJxPqf9>

❖ **Participants:** <https://forms.gle/SJB6ZbKo5H8ShLGk7>

Prof. K.K.Biswas,(Retired faculty from IIT Delhi), currently at IIIT Delhi



Prof. K.K.Biswas did his Btech in Electrical Engineering from IIT Madras, followed by Mtech in control systems and Phd in signal estimation from IIT Delhi. After a brief stint at University of Roorkee, he joined the EE dept. of IIT Delhi. He later shifted to Computer science engineering department where he is currently serving as a professor.

Dr.Dushantha Nalin K Jayakody, Professor in school of Computer Science and Robotics,

Dr.Nalin Jayakody, Professor in school of Computer Science and Robotics, National Research Tomsk Polytechnic University (TPU), Russia. He has published over 120 international peer reviewed journal, conference papers and books. . He currently serves as an Area Editor of the Elsevier Physical Communication Journal, MDPI Information journal and Wiley Internet of Technology Letter.



Invited Talks

[1] **Dr.Lakshmanan Nataraj**, Senior Research Staff Member,Mayachitra

Deep learning data solution, Santa Barbara, United States

[2] **Dr.Gaurav Purohit**, Scientist,CSIR-CEERI,Pilani

[3] **Abhinav**, MBit Technologies, Bangalore.

[4] **Mr.Mohammed shaik**, Scientist, ISRO, Mahendragiri

[5] **Ms.Vineetha Yogesh**, Qualcomm, Bangalore

[6] **Mr.Sankar Nair**, Qualcomm, Chennai

[7] **Ms.Florintina**, GE Electronics, Bangalore

Patron

- Professor. Dr. Mini Shaji Thomas, Director, National Institute of Technology Tiruchirappalli

Technical Program committee (External members)

- **Abhinav**, MBit Technologies, Bangalore.
- **Akhil Gupta**, Lovely Professional University, Phagwara, Punjab.
- **Anand Kulkarni**, Symbiosis Institute of Technology, Pune.
- **K K Biswas**, Retired Professor, Indian Institute of Technology Delhi.(Currently at IndraPrastha Institute of Information Technology Delhi.)
- **Dushantha Nalin K Jayakody**, National Research Tomsk Polytechnic University, Russia.
- **Florintina**, GE Electronics, Bangalore.
- **Gaurav Purohit**, CSIR-CEERI, Pilani, Rajasthan.
- **JithinJagannath**, Director, Marconi-Rosenblatt AI/ML Innovation Lab,Research scientist, Andro computational solutions, New York.
- **Krishna Moorthy**, Indian Institute of Information Technology Tiruchirappalli.
- **Lakshmanan**, Senior Research scientist, MayachitraInc. Deep learning data solutions, California.
- **Mr.Mohammed shaik**, Scientist, ISRO, Mahendragiri
- **Sankar Nair**, Qualcomm, Chennai.
- **Sathyabama B**, Thiagarajar College of Engineering, Madurai
- **Swaminathan R**, Indian Institute of Technology Indore.
- **Vineetha Yogesh**, Qualcomm, Bangalore.

Technical Program committee (Internal members from NITT,Trichy)

- **B Janet/ CA**
- **B Malarkodi/ECE**
- **B Rebekka/ECE**
- **E S Gopi/ECE**
- **G Thavasi Raja/ECE**
- **P Muthuchidambaranathan**, Head of the Department/ECE
- **Rajeswari Sridhar**, Head of the department/CSE
- **S S.Karthikeyan/ECE**
- **Varun P Gopi/ECE**
- **V Sudha/ECE**
- **G R Gangadharan/CA**



Publication

Researchers are invited to submit their original research findings. Submitted papers are subjected to Double review process and the selected papers will be published as the book series **Lecture Notes in Electrical Engineering (Confirmed). ISI Proceedings, EI-Compendex, Scopus, Meta press, Web of science and Springer link** Detailed information on paper submission, accommodation and travel will be posted on the [workshop website](#). Papers can be submitted via Easy Chair through [this](#) link. Paper template is given [here](#).

Reference for related works and Links to the dataset

- [1] [CRAWDAD dataset](#) [UMASS Trace Repository](#)
- [2] [Machine Learning Paradigms for Next-Generation Wireless Networks](#)
- [3] [Machine Learning for Communications](#)
- [4] [Pattern Recognition and Computational Intelligence Techniques Using Matlab](#)

Coordinator

Dr. E. S. Gopi,

Head of the Pattern recognition and Computational intelligence laboratory

Associate Professor/ECE, NIT Trichy

Co-Coordinators

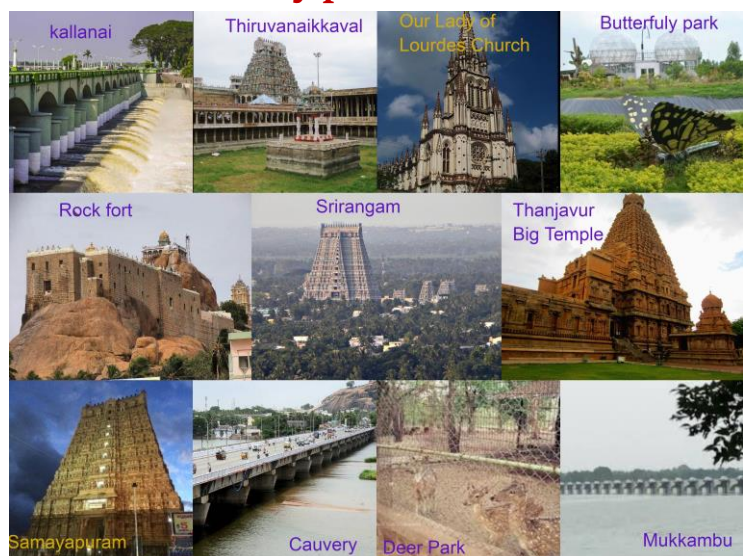
Dr. B. Rebekka,

Assistant Professor/ECE, NIT Trichy

Dr. G. Thavasi Raja,

Assistant Professor/ECE, NIT Trichy

Nearby places to visit



Organized by

Pattern Recognition and Computational Intelligence Laboratory, Department of Electronics and Communication Engineering, National Institute of Technology, Tiruchirappalli

[COMPSIG NITT \(Newsletter\) Link](#)