

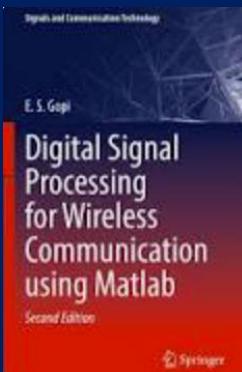
**National Institute of Technology Tiruchirappalli**  
**Department of Electronics and Communication Engineering**  
**5 Days Workshop on Machine Learning Deep Learning and**  
**Computational intelligence for Wireless communication**

**(MDCWC 2026)**

**April 13<sup>th</sup> to April 17<sup>th</sup>  
2026 (Hybrid Event)**

### **Highlights**

**Topics covered based on the following books**



**5 Invited speakers from Academia and Industry**

**Introduction to 5G Use case lab is also covered**

**Case studies on the recently published articles from PRCI group, NITT**

### **Objective**

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 course aims on strengthening the mathematical foundations involved in wireless communication, machine learning, deep learning and computational intelligence using illustrations using Matlab. Evening classes are offered to facilitate working professionals.

**DAY-1** Parametric approach to Linear regression (Maximum Likelihood Estimation, Least square estimation) – **Invited talk -1** Regularization technique Bayes technique, Kernel smoothing Gaussian process technique

**DAY-2** Principal Component Analysis, Linear Discriminant Analysis , Kernel Linear Discriminant Analysis, Independent Component Analysis, **Invited talk -2** Detection theory (AWGN Model) : Bayes, Mini-Max and Neyman-pearson technique Detection theory (Binary channel model) : Bayes, Mini-Max and Neyman-pearson technique

**DAY-3:** Probabilistic discriminative model: Perceptron, Multiple class Logistic regression, Support Vector Machine **Invited talk -3** Estimation theory (AWGN Model) : MMSE, MMAE and MAP technique Estimation theory (Binary channel Model) : MMSE, MMAE and MAP technique

**DAY-4:** Probabilistic generative model: Gaussian Mixture Model (Combinational model) **Invited talk -4** Introduction to OFDM OTFS - Case study\*

**DAY-5:** Probabilistic generative model: Hidden Markov Model (Sequential model) **Invited talk -5** Case study\*

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**TOPICS OF CASE STUDY \***

- [1] S. M. Baby and E. S. Gopi, "Complex Valued Linear Discriminant Analysis on mmWave Radar Face Signatures for Task-Oriented Semantic Communication," in *IEEE Transactions on Cognitive Communications and Networking*, vol. 12, pp. 1892-1904, 2026 (SCIE Journal, Q1) [LINK: https://ieeexplore.ieee.org/abstract/document/11124273](https://ieeexplore.ieee.org/abstract/document/11124273)
- [2] S. M. Baby and E. S. Gopi, "Complex Chromatic Imaging For Enhanced Radar Face Recognition," Elsevier journal on Computers & Electrical Engineering, vol. 25, 2025. (SCIE, Q1 JOURNAL)  
LINK: <https://www.sciencedirect.com/science/article/pii/S0045790625001417>
- (3) C. Kiruthika and E. S. Gopi, Signal and Channel State Information compression, detection for various channel model "FBCNet: Fusion Basis Complex-valued Neural Network for CSI compression in Massive MIMO networks," *IEEE Networking Letters*, 2024. (ESCI, Q1 JOURNAL) [LINK: https://ieeexplore.ieee.org/abstract/document/10783048](https://ieeexplore.ieee.org/abstract/document/10783048)
- [4] C. Kiruthika and E. S. Gopi, "CSI compression with Kernel-based sparsity learning for FDD Massive MIMO systems," *IEEE Transactions on Cognitive Communications and Networking*, 2024. (SCIE, Q1 JOURNAL)  
LINK: <https://ieeexplore.ieee.org/abstract/document/10794672>

**Invited speakers**

1. Mr. Mohamed ilias, Assistant Director (Technology), Ministry of Communications, DOT, Tamil Nadu LSA
2. Dr. Prabhat Sharma, Visvesvaraya National Institute of Technology, Nagpur
3. Mr. Prakash Rao, Senior Director-Software, Signaltron Systems Private Limited
4. Dr. Shyam lal, National Institute of Technology, Karnataka
5. Dr. R. Swaminathan, Indian Institute of Technology, Indore

**PATRON:** Dr .G. Aghila, Director

**CO-PATRON:** Dr. M. Pramelatha, Dean (Research and Consultancy) Dr. R. Pandeeswari, Head of the Department, ECE

**CO-ORDINATOR and SPEAKER:** Dr. E.S. Gopi, Professor, Department of ECE

**Registration details**

Number of participants: 50 (First Come First Served Basis)

Participants: UG, PG, Research scholars and faculty members with relevant background.

Registration fees: Rs.2500/- Includes Learning kit, Lunch and snacks. Accommodation and other expenses are not covered)

Click for further details: [Link](#)

Organized by

**Pattern recognition and Computational Intelligence Group**

**Department of ECE, NIT, Tiruchirappalli**

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