



### Information Technology

Event Title	AICTE SPONSERED STTP ON "Applied Soft Computing and Vision Machine Techniques"		
Objective of Event	To familiarize the researchers with the highest quality research in soft computing applications and convergence in the domains like Fuzzy Logic, Artificial Neural Networks, Evolutionary Algorithms, Deep learning neural networks and other similar techniques to offer		
Chief Guest /Speaker Details	Dr.T.Thyagarajan, Professor& Dean, Department of Instrumentation Engineering, MIT, Anna University Dr. Nilanjan Dey, Associate		
Date	26/04/2021 to 01/05/2021	Time	10.00 AM to 4.00 PM
Venue	GOOGLE MEET	No. of Participants	56

## REPORT

### TITLE

THE AICTE SPONSORED ONE WEEK SHORT TERM TRAINING PROGRAM ON "APPLIED SOFT COMPUTING AND VISION MACHINE TECHNIQUES (SERIES III)"

### CONTENT

#### INAUGURATION:

Day1 of the THE AICTE SPONSORED ONE WEEK SHORT TERM TRAINING PROGRAM ON "APPLIED SOFT COMPUTING AND VISION MACHINE TECHNIQUES (SERIES III)"

started with the inauguration with the introduction by Mrs. C.Tamilselvi, Assistant Professor, Department of Information Technology. The participants and dignitaries were welcomed by Prof. Dr. N. Kanya, Head of the Department Information Technology, she also gave the introductory talk about the department of EEE & IT. Our beloved Joint Registrar, Prof. Dr. V. Cyril Raj, Inaugurated the FDP with the Introductory Address, in which he highlighted the importance of Soft computing and automation. Dr. Dahlia Sam, Assistant Professor, Department of Information Technology introduced the chief guest and the speaker for the session 1 Dr. T. Thyagarajan, Professor & Dean, Department of Instrumentation Engineering, MIT, Anna University. Dr. T. Thyagarajan, addressed the participants and the dignitaries with his Inaugural address. The inauguration of the event was conducted through Goggle Meet online platform.



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## TITLE

DAY 1 - SESSION1- MODELLING AND CONTROL OF NON-LINEAR SYSTEMS USING SOFT COMPUTING TECHNIQUES

## CONTENT

Day 1: Session – 1 handled by Dr. T. Thyagarajan, Professor & Dean, Department of Instrumentation Engineering, MIT, Anna University who delivered a lecture entitled “MODELLING AND CONTROL OF NON-LINEAR SYSTEMS USING SOFT COMPUTING TECHNIQUES”. In the course of his lecture he covered various topics like the history of ANN, the need for ANN, characteristics of ANN, the Back Propagation Algorithm with a case study of Air heating system. Then his lecture gave insights on the other topics of soft computing techniques like Fuzzy logic and its application for Air heating system, followed by the Genetic Algorithm and its types. His lecture concluded with the various performance measures and few queries raised by the participants which were answered by the resource person. He also answered all the question raised by the participants patiently. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



## TITLE

DAY 1: SESSION – 2 -COMPUTER-AIDED DIAGNOSIS IN MEDICAL IMAGING:  
APPLICATIONS, CHALLENGES, AND FUTURE  
P R O S P E C T S

## CONTENT

Day 1: Session – 2 handled by Dr. Nilanjan Dey , PhD., SMIEEE, Associate Professor, Department of Computer Science and Engineering , JIS University, Kolkata, India . He delivered a lecture entitled “Computer-Aided Diagnosis in Medical Imaging: Applications, Challenges, and Future Prospects”. In the course of his lecture he covered various ANN model, starting from the basic model to the Convolutional neural networks for identifying the tumor in human brain. He also explained the deep Learning architectures for identification of diabetic retinopathy. All the applications were supported by the performance measures like True positive, True negative, False positive and False negative. Also the performance measures like false positive rate, true positive rate, specificity and sensitivity measures were also evaluated. His lecture concluded with few queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



## TITLE

DAY 1: SESSION – 3 - ESSENCE OF DEEP NEURAL NETWORKS, TRADITIONAL ML VS DEEP LEARNING, MATHEMATICS BEHIND DEEP LEARNING, MULTILAYER PERCEPTRON, CONVOLUTIONAL NEURAL NETWORKS.

## CONTENT

DAY 1: SESSION – 3 Hands on training on “Essence of Deep Neural Networks, Traditional ML vs Deep Learning, Mathematics behind Deep Learning, Multilayer Perceptron, Convolutional Neural Networks.” handled by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai. Dr.K.Sujatha, Professor, Dept of EEE. Introduced the speaker of the session. Mr. Dhamodharan gave an introduction about the neural networks. He explained the model using the hands on training using google collab. The participant could able to get great insight and hands on training on neural networks. The participants were instructed how to work with google collab from the basic. The session ended with the question and answer session. Mr. Dhamodharan. G was patient to answer all the question raised by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of Information Technology.



## TITLE

DAY 2 – SESSION 1: CHANGES AND EVOLUTION IN DEEP LEARNING NEURAL NETWORKS

## CONTENT

Day 2 – Session 1: “Changes and Evolution in Deep learning neural networks” handled by Dr. N. Pappa, Professor & HOD, Department of Instrumentation Engineering, MIT, Anna University. Dr. K. Sujatha, Professor Department of EEE Introduced her. In the course of the lecture Dr. N. Pappa covered various topics like the history of deep learning techniques, the need for deep learning techniques, characteristics of deep learning techniques, and the necessity of deep learning methods. The architectures relating to Convolution Neural Network (CNN), Recurrent Neural Network (RNN), etc., was discussed with simple examples like object recognition, Long Short term memory (LSTM). and classification. Her lecture concluded with a couple of queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of Information Technology.



## TITLE

DAY 2 – SESSION 2: MACHINE LEARNING TECHNIQUES FOR SPEECH PROCESSING

## CONTENT

Day 2 – Session 2: “Machine learning Techniques for Speech processing” handled by Dr. Anil Kumar Vuppala, Associate Professor, Speech Processing Lab, IIIT Hyderabad. Dr. Nalini. T, Professor, department of IT introduced him. In the course of the lecture Dr. Anil Kumar Vuppala covered various topics like the speech identification, Speaker recognition and also language to language translation. Some real time examples were pertaining to home automation, biomedical application for identification of CoVid -19 using a contactless technology. He also discussed about the real time challenges encountered and solved during the due course of development of such applications. He exhibited the real time demonstration of the products related to language translation developed at Speech Processing Lab, IIIT Hyderabad. His lecture concluded with some queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



## TITLE

DAY 2 – SESSION 3: CONVOLUTIONAL NEURAL NETWORKS - CONTD, INTERNAL STUFF OF CNNs, SOTA CNNs FOR COMPUTER VISION, OBJECT DETECTION, YOLO

## CONTENT

Day 2 – Session 3: “Convolutional Neural Networks - Contd, Internal stuff of CNNs, SOTA CNNs for computer vision, Object Detection, YOLO”-Hands on session by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session. He elaborately covered various activation function, loss function, different optimizers. Mr. Dhamodharan. G gave introduction to Convolution Neural Networks, AlexNet and explained how to build your own image classification algorithm. The participants were enthusiastically participated in the hands on session and carrier away the instruction given by Mr. Dhamodharan. G. He also shared many links for downloading datasets. The hands on session was much interactive and he patiently answered all the question that was asked by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



## TITLE

DAY 3 – SESSION 1: VLSI ARCHITECTURE FOR IMAGE PROCESSING

## CONTENT

Day 3 – Session 1: “VLSI Architecture for Image Processing” was handled by Dr.D. Vaithyanathan, Assistant Professor, Department of Electronics and Communication Engineering, National Institute of Technology Delhi. Mrs. S.Shobana, Assistant Professor, Department of Information Technology Introduced the speaker of the session. In the course of his lecture he covered various topics like need for developing VLSI architectures for various image processing algorithms. The history of IC design, history behind VLSI, Moore's law, some leading examples, technologies to reduce the number of components during fabrication and scaling were discussed. He also discussed about various VLSI architectures used to design hardware for few Image processing algorithms like Edge detection, segmentation, and clustering and object recognition. His lecture concluded with a couple of queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K. Sujatha, Professor, Dept of EEE



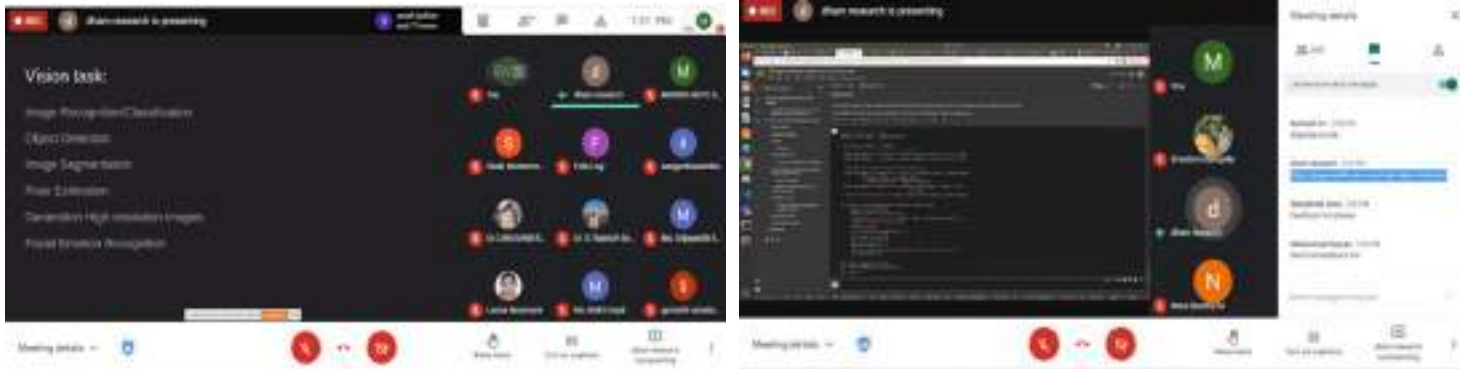


## TITLE

DAY 3 – SESSION 2 & 3: OBJECT DETECTION - CONTD, YOLO V1, V2, V3 AND V4 , EFFICIENT DET - GOOGLE'S EFFICIENT AI ALGORITHM, REAL AI VS ALGORITHMIC AI, APPLICATION - SELF DRIVING CAR'S OBJECT DETECTION - INTRO

## CONTENT

Day 3 – Session 2 & 3: “Object Detection - Contd, YOLO v1, v2, v3 and v4 , Efficient Det - Google's Efficient AI algorithm, Real AI vs Algorithmic AI, Application - Self Driving Car's Object Detection - Intro”-Hands on session by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai for 3 hrs. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session. In his lecture he covered Image Recognition / Classification, Object Detection, Image Segmentation, Pose Estimation, General high resolution images and Facial Emotion Recognition. The participants were enthusiastically participated in the hands on session and carrier away the instruction given by Mr. Dhamodharan. G The hands on session was much interactive and he patiently answered all the question that was asked by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of IT



## TITLE

DAY 4 – SESSION 1: FUZZY ENHANCED ENERGY EFFICIENT MAC PROTOCOL  
FOR WIRELESS SENSOR  
NETWORKS

## CONTENT

Day 4 – Session 1: “Fuzzy Enhanced Energy Efficient MAC protocol for Wireless sensor networks” handled by Dr. Sabitha Ramakrishnan, Associate Professor, Department of Instrumentation Engineering, MIT, Anna University. Ms. TejaSri. M.V.S.L introduced the speaker of the session. In the course of her lecture she covered two topics like fuzzy enhanced MAC protocols for Wireless communication. The second application was with the detection of Arrythemia detection using Fuzzy logic. She elaborately discussed about the formation of linguistic variables, choice of the membership function, decision making logic and defuzzification methods. The participants gained knowledge on the above said topics which would be very much helpful in carrying their research work in this area. Her lecture concluded with few queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



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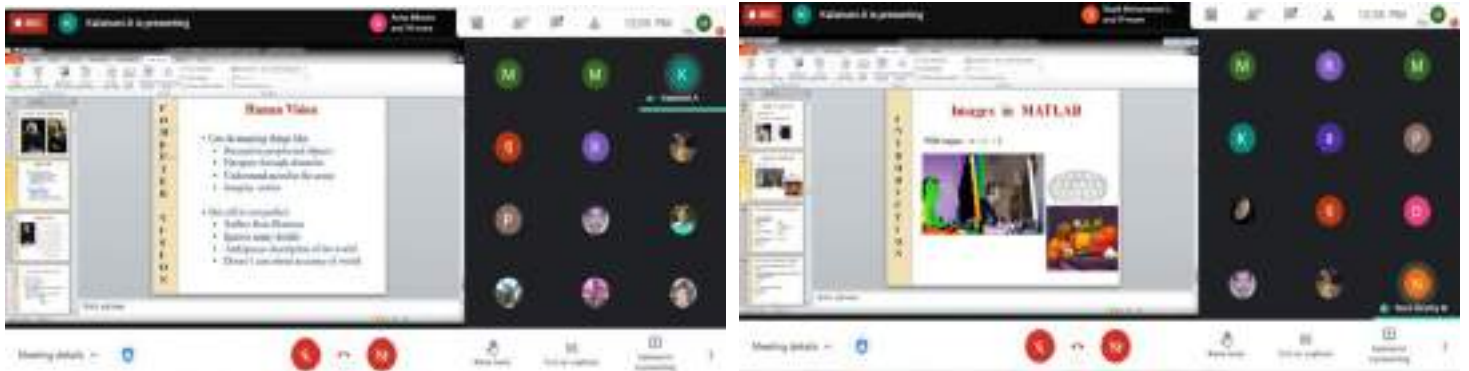


## TITLE

DAY 4 – SESSION 2: DEEP LEARNING FOR COMPUTER VISION

## CONTENT

Day 4 – Session 2: “Deep learning for computer vision” handled by Dr. A.Kalaivani, Associate Professor, Dept. CSE. Saveetha School of Engineering, SIMATS, Chennai. . Ms. TejaSri. M.V.S.L, Assistant Professor, Department of Information Technology introduced the speaker of the session. In the course of her lecture Dr. A.Kalaivani covered the difference between the computer vision and human vision with various examples. Dr. A.Kalaivani, gave a detailed working in MATLAB for processing different Images of different kind, she also elaborated on Pattern Recognition and Deep Learning. Dr. A.Kalaivani, discussed on coding in MATLAB for Deep CNN. The participant we able to understand the working of different images in MATLAB for CNN. Her lecture concluded with few queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr.K.Sujatha, Professor, Dept of EEE



## TITLE

DAY 4 – SESSION 3: SELF-DRIVING CAR - CONTD WHAT IS SELF-DRIVING CAR, WHAT IT MEANS TO AI? DATASET PREPARATION, INTRODUCTION TO KERAS FRAMEWORK, USING PRETRAINED WEIGHTS

## CONTENT

Day 4 – Session 3: “Self-Driving Car - Contd What is Self-Driving Car, What it means to AI? Dataset preparation, Introduction to Keras Framework, Using Pretrained weights”- Hands on session by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session. Mr. Dhamodharan. G gave an elaborated function of self-driving car using Artificial Intelligence, he explained how to prepare the Dataset and train them for the framework, he detailed on KERAS framework using pertained weighs. The participants were enthusiastically participated in the hands on session and carrier away the instruction given by Mr. Dhamodharan. G The hands on session was much interactive and he patiently answered all the question that was asked by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of IT.



## TITLE

DAY 5 – SESSION 1: MACHINE LEARNING-BIG DATA PERSPECTIVE-  
CHALLENGES AND  
A P P R O A C H E S

## CONTENT

Day 5 – Session 1: “Machine Learning-Big Data Perspective-Challenges and approaches” handled by Dr. S. Chitrakala, Professor, CSE Department, CEG, Anna University. Ms.R.S. Rashika, Assistant Professor, Department of Information Technology introduced the speaker of the session. Dr. S. Chitrakala started her lecture with the comparison of Artificial Intelligence Vs Machine Learning Vs Data Analytics Vs Data Science. She explained in detail on how Artificial Intelligence, Machine Learning, Data Analytics and Data Science are best suited for various approaches. She elaborated on what is deep learning and how it works then compared it with machine learning. She gave all machine learning paradigms for BigData and elaborated on them. The session ended with question and answer, she patiently answered all the queries asked by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr. K. Sujatha, Professor, Department of Electrical and Electronics Engineering

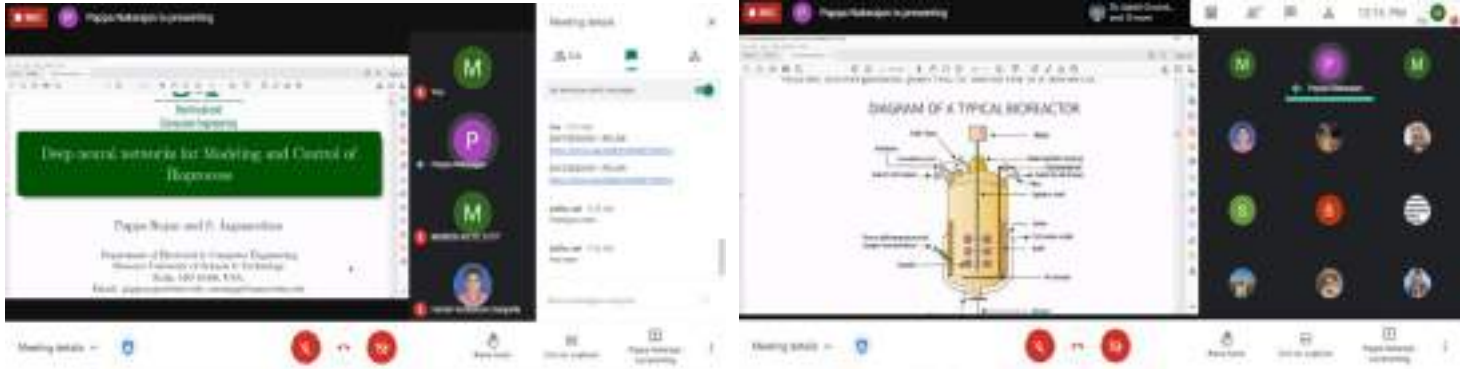


## TITLE

DAY 5 – SESSION 2: DEEP LEARNING AND ITS APPLICATION FOR MODELING AND CONTROL OF INDUSTRIAL PROCESSES

## CONTENT

Day 5 – Session 2: “Deep learning and its application for modeling and control of industrial processes” handled by Dr. N. Pappa, Professor & HOD, Department of Instrumentation Engineering, MIT, Anna University. Dr. K. Sujatha, Professor, Department of EEE welcomed the speaker of the session and the gathered participants. In the course of lecture she covered various topics like modelling and design of bioreactors. She first illustrated the basic controller design, followed by single layered ANN model, for controlling the output bioreactor. She discussed the drawbacks existing with the conventional single layered architectures of ANN used for controlling the bioreactor. Followed by this, she discussed the CNN model for controlling the output of the bioreactor and also substantiated with few performance measures. Her lecture concluded with few queries raised by the participants which were answered by the resource person. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr. K. Sujatha, Professor, Department of EEE



## TITLE

DAY 5 – SESSION 3: REAL TIME APPLICATIONS OF MACHINE LEARNING ALGORITHMS

## CONTENT

Day 5 – Session 3: “Real Time Applications of Machine Learning Algorithms” handled by Dr. S. Prasanna Devi, Professor & Head, CSE Dept, vadapalani campus, SRM Institute of Science & Technology. Ms.R.S. Rashika, Assistant Professor, Department of Information Technology introduced the speaker of the session Dr. S. Prasanna Devi initially in her lecture she pointed out the difference between Artificial Intelligence and machine learning techniques. She discussed the entire structure of the MLP trained with BPA. She has deeply explained how to maintain a trade off during the training of ANN architectures. She also discussed about CNN and shared a few python coding was shared to the participants, which they felt, it was very useful to them. The session was highly interactive and she answered all the queried raised by the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr. K. Sujatha, Professor, Department of EEE



## TITLE

DAY 5 – SESSION 4: SELF-DRIVING CAR-2, GETTING THE MODEL READY, REAL-TIME AI INFERENCE, PADDING

## CONTENT

Day 5 – Session 4: “Self-Driving Car-2, Getting the model Ready, Real-time AI inference, Padding”- Hands on session by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session and the gathered participants. Mr. Dhamodharan. G gave an elaborated function of self-driving car using AI, he explained how to prepare the Dataset and train them for the framework, he explained the GPU environment from the installation and compared it with python. He gave an elaborate hands on training to the participants on setting up GPU in Windows and CUDA NVIDIA. The hands on session was much interactive and he patiently answered all the question that was asked by the participants. The participants were enthusiastically participated in the hands on session. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of IT.





## TITLE

DAY 6 – SESSION 1: AI-BASED SINGLE OBJECTIVE OPTIMIZATION FOR IMPROVED YIELD IN BIOFUEL FED CATALYTIC CRACKING REACTOR

## CONTENT

Day 6 – Session 1: “AI-Based Single Objective Optimization for Improved Yield in Biofuel Fed Catalytic Cracking Reactor” handled by Dr. M. Mythily, Assistant Professor, Department of Instrumentation Engineering, MIT, Anna University. Mrs. K. Nithya, Assistant Professor, Department of Information Technology introduced the speaker of the session. Dr. M. Mythily elaborated on the Catalytic Cracking Reactor which is used to produce biofuel. She discussed on the reactor and the operating conditions. She highlighted on operating design variable, reactions and equations, Optimization techniques, PSO algorithms, genetic algorithm, Simulated Annealing, comparison before and after optimization and results. Dr. M. Mythily shared possible research scope and challenges in this area. The session ended with answering the queries from the participants. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Dr. K. Sujatha, Professor, Department of EEE



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## TITLE

DAY 6 – SESSION 2: SELF DRIVING CAR-2, MULTIPLE PERSPECTIVES ON MACHINE VISION( COMPUTER VISION), GLIMPSE ON 3D OBJECT DETECTION

## CONTENT

Day 6 – Session 2: “Self Driving Car-2, Multiple perspectives on machine vision( Computer vision), Glimpse on 3D Object Detection”-Hands on session by Mr. Dhamodharan. G, AI Software Engineer, Alphaics Corporation, Chennai. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session and the gathered participants. Mr. Dhamodharan. G, in his lecture covered the multiple perspective on the self-driving car type 2. He highlighted on driving controls, levels of driving automation, path planning for the vehicles, DMS components and gave a live example for simulation. He also shared few links of eLearning materials and self-study websites for self-driving car. The session was highly interactive and the resource person ended the session answering all the queries. The participants were enthusiastically participated in the hands on session. The session was highly informative and interactive. The session came to the end with a formal vote of thanks given by Mrs. C. Tamilselvi, Assistant Professor, Department of IT.



## TITLE

DAY 6 – SESSION 3: NATIONAL EDUCATIONAL POLICY 2020

## CONTENT

Day 6 – Session 3: “ National Educational Policy 2020” handled by Dr. T. Thyagarajan, Professor & Dean, Department of Instrumentation Engineering, MIT, Anna University. Dr. K. Sujtha, Professor, Dept of EEE welcomed the speaker of the session and the gathered participants. Dr. T. Thyagarajan gave detailed view the national educational policy coming up. He elaborated on various topics like restructuring of education, quality education, stipend given to the students, liberal education, multi entry and multi exit degree programmes. He also discuss about Research and Innovation, multidisciplinary education and internships. This session was must need by the participants to get familiarized with the up coming National Educational Policy 2020. The session was interactive and Dr. T. Thyagarajan, patiently answered all the question from the participants. The session came to the end with a formal vote of thanks given by Mrs. C.Tamilselvi, Assistant Professor, Department of Information Technology.



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## TITLE

VALEDICTORY OF THE THE AICTE SPONSORED ONE WEEK SHORT TERM TRAINING PROGRAM ON “APPLIED SOFT COMPUTING AND VISION MACHINE TECHNIQUES (SERIES III)”

## CONTENT

Followed by the sessions the event came to the end with a valedictory ceremony in which the participants and dignitaries were welcomed by Prof. Dr. N. Kanya, HOD-IT. Mrs. C.Tamilselvi, Assistant Professor, Dept of IT gave the summary of The AICTE Sponsored One Week Short Term Training Program On “Applied Soft Computing and Vision Machine Techniques (Series III)”. Followed by Our beloved Joint Registrar, Prof. Dr. V. Cyril Raj gave the valedictory address. Our dynamic Dean EPA Prof. Dr. L. Ramesh encouraged the participants and appreciated the organizing team of this event. Many participants came forward and shared their valuable feedback about this event. Finally the event came to the end with the photo session followed by the formal Vote of thanks delivered by Dr. K. Sujatha, Professor Dept of EEE.

The event was coordinated and organized by Dr. K. Sujatha, Professor Dept of EEE and Mrs. C.Tamilselvi, Assistant Professor, Dept of IT.

We would like to thank our Honourable President for his continuous support and encouragement and also would like to thank Vice Chancellor, Registrar, Joint Registrar, Dean EPA.



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## EVENT OUTCOME

The participants would get familiar with soft computing applications and convergence in the domains like Fuzzy Logic, Artificial Neural Networks, Evolutionary Algorithms, Deep learning neural networks and other similar techniques to offer optimal solution to the real-world complexities

## PHOTOS





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Mrs.C.Tamilselvi