A Reflection Report For

Two Days

National Workshop

On

"Deep Learning Simplified" in

association with Hexaware

Technologies Limited

March 11 & 12,2020

Organized By

Approved by,
Dr. R. Anitha,

COORDINATOR

HOD

Department of Computer Science & Engineering

ORGANIZING COMMITTEE

Name of the Chief Patron : Dr. M. Sivanandham, Secretary

Name of the Patron : Dr. S. Ganesh Vaidyanathan, Principal

Name of the Convener : Dr. R. Anitha, Prof & HOD/CS

Name of the Coordinators : Dr. R. Jayabhaduri, Asso Prof/CS

Dr. N.M.Balamurugan, Asso Prof/CS

Ms. V. Rajalakshmi, AP/CS

Agenda

Day	Date	Time	Title of the Talk	Name of the Resource Person
1	11/03/2020	8:50 AM – 9:50 AM	Classification and Clustering	Dr.N.M.Balamurugan, ASP/CSE, SVCE
		9:50 AM-12:05 PM	Hands-on : Machine Learning with Python	Ms. V.Rajalakshmi, AP/CSE, SVCE
		12:45 PM-15:15PM	Hands-on : Natural Language Processing with Python	Dr. R.Jayabhaduri, ASP/CSE, SVCE
2	12/03/2020	8:50 – 10:10 AM	AI/ML Introduction, Evolution of Machine Learning till Deep Learning	Mr. A. Soundarapandian, Head – Data Science Practice Hexaware Technologies Ltd., Chennai
		10:25 – 11:50 PM	Hands-on : Introduction to CNN using TensorFlow	Mr. Anuroop Pratap System Analyst, Business Intelligence and Analytics, Hexaware Technologies Ltd.
		11:50AM-12:05 PM 12:45PM-13:35PM	Hands-on : Transfer Learning	Ms. A. Pravalika Senior Software Engineer, Business Intelligence and Analytics, Hexaware Technologies Ltd.
		13:35PM-14:45 PM	Hands-on : Reinforcement Learning with Python	Mr. Viraj Shirsekar System Analyst, Business Intelligence and Analytics, Hexaware Technologies Ltd.

Report on "Deep Learning Simplified"

The department of Computer Science and Engineering organized a two days National Workshop on "Deep Learning Simplified" in association with Hexaware Technologies Limited, Chennai during March 11-12,2020. Venue for the workshop is CS-Lab 4, first floor, CS department.

Objective :

The objective of this workshop is to provide an opportunity for students and faculty members to upgrade their knowledge and practical skills in the areas of Artificial Intelligence, Machine Learning, Deep Learning and Natural Language Processing.

The workshop equips the participants to use deep learning for various machine learning tasks and expose them to the challenges in deep learning research. The programme includes hands-on sessions of developing Machine learning algorithms in Python for Classification tasks and Text processing and Deep neural networks like Convolutional Neural Networks and Generative Adversarial Networks in Python using TensorFlow.

Day 1 : March 11,2020

The workshop commenced with an inaugural address by Dr. R. Anitha, Prof & HOD/CSE and Convenor. The first session was a talk on "Classification and Clustering" by Dr.N.M.Balamurugan, Associate Professor, CSE. He introduced the basics of machine learning concepts, clustering and classification. He also discussed about the learning paradigms in Machine Learning.
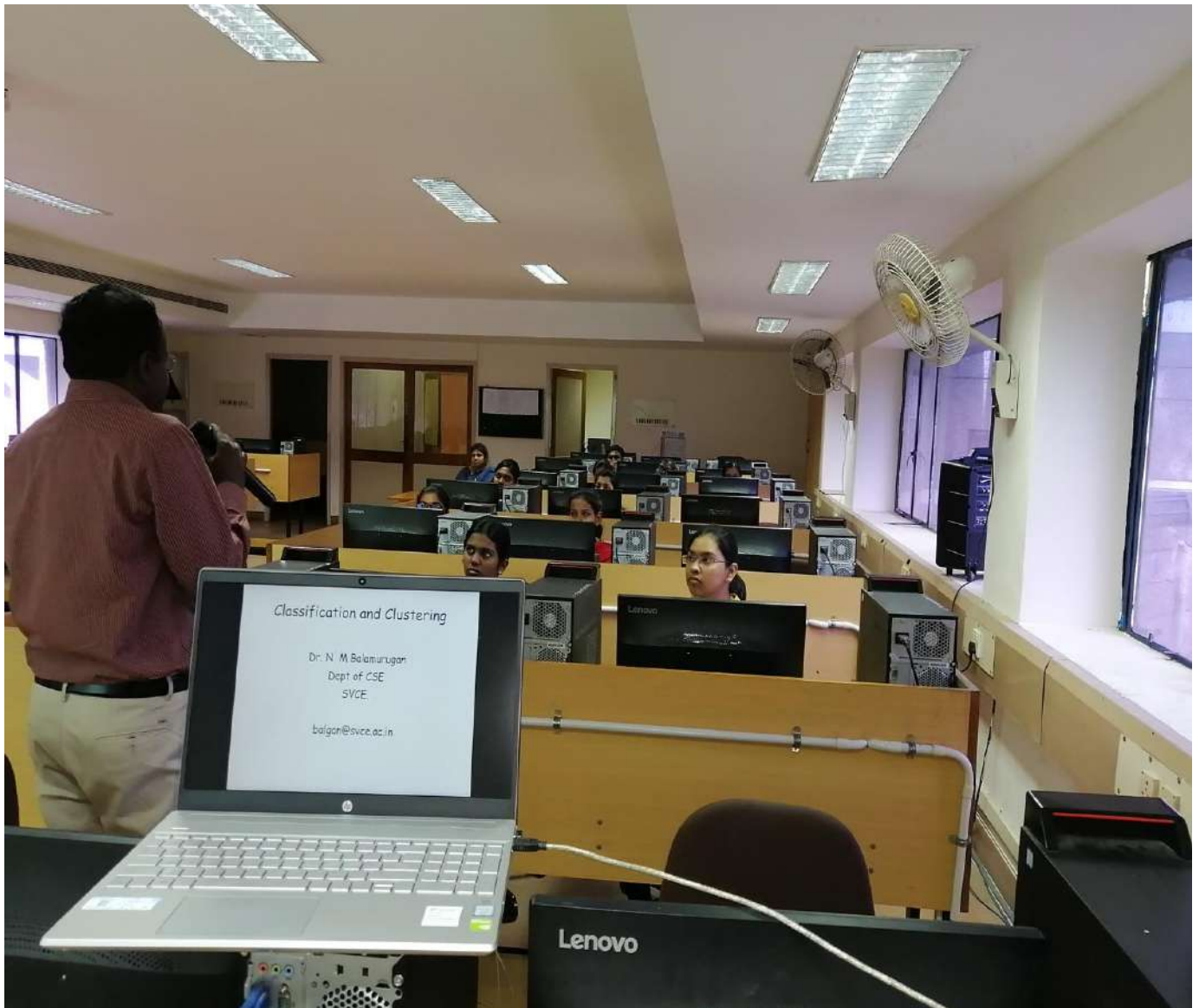

He also discussed about various classification and clustering algorithms with examples.

Session 2 was a hands-on session on "Machine Learning with Python" in Spyder IDE by Ms. V. Rajalakshmi, AP/CSE. The participants were trained to do predictive analysis for various datasets and building Machine Learning models for Iris dataset using KNN classification algorithm and decision trees in Python respectively. The participants were exposed to various Machine Learning Python libraries like NumPy, Scikit-learn and Pandas for data manipulation.
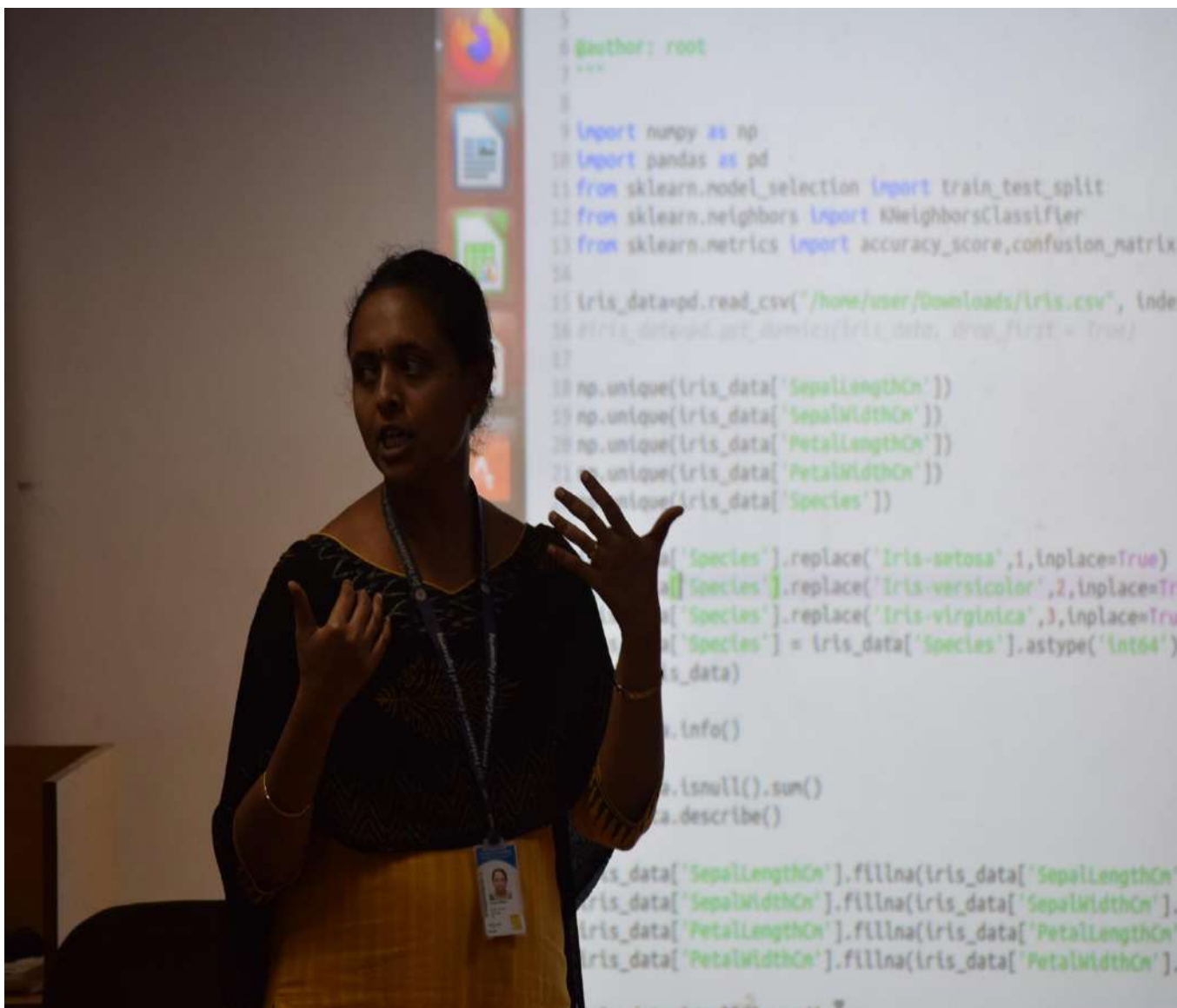
She also explained about formulation of a confusion matrix to evaluate the performance of ML algorithm for any dataset.
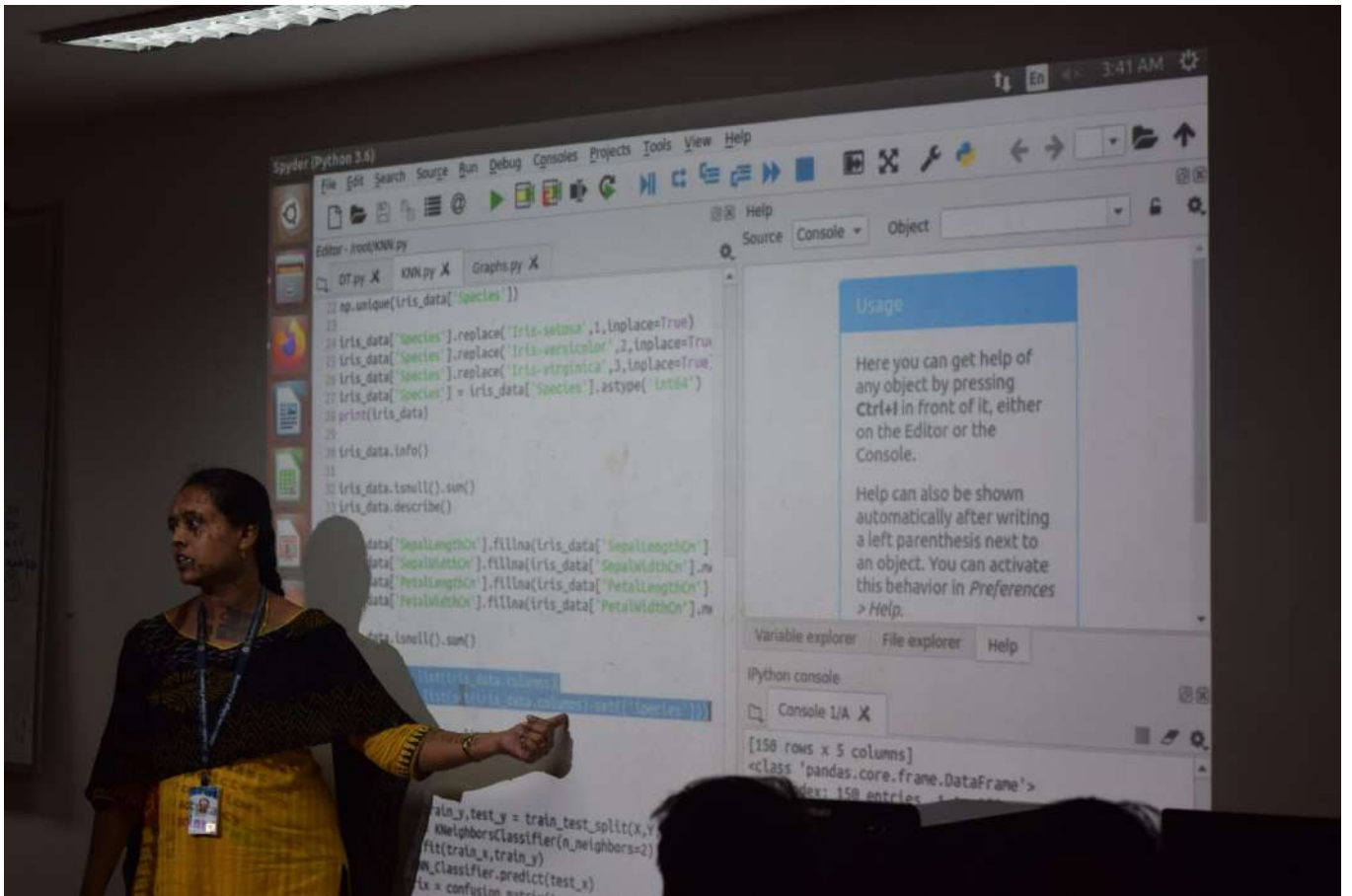
Session 3 was a hands-on session on "Natural Language Processing with Python" in Spyder IDE by Dr. R. Jayabhaduri, Asso Prof/CSE. The participants gained knowledge on installing Anaconda packages using Python in Ubuntu 16.04 and 18.04 versions for text processing, accessing text from various corpora like Gutenberg, Brown, Reuters and Corpora in other languages, feature extraction using Bag of Words and Skip-Gram model, performing Sentiment Analysis for Movie datasets and building a simple neural network for Alice.txt using word embedding to find document similarity.
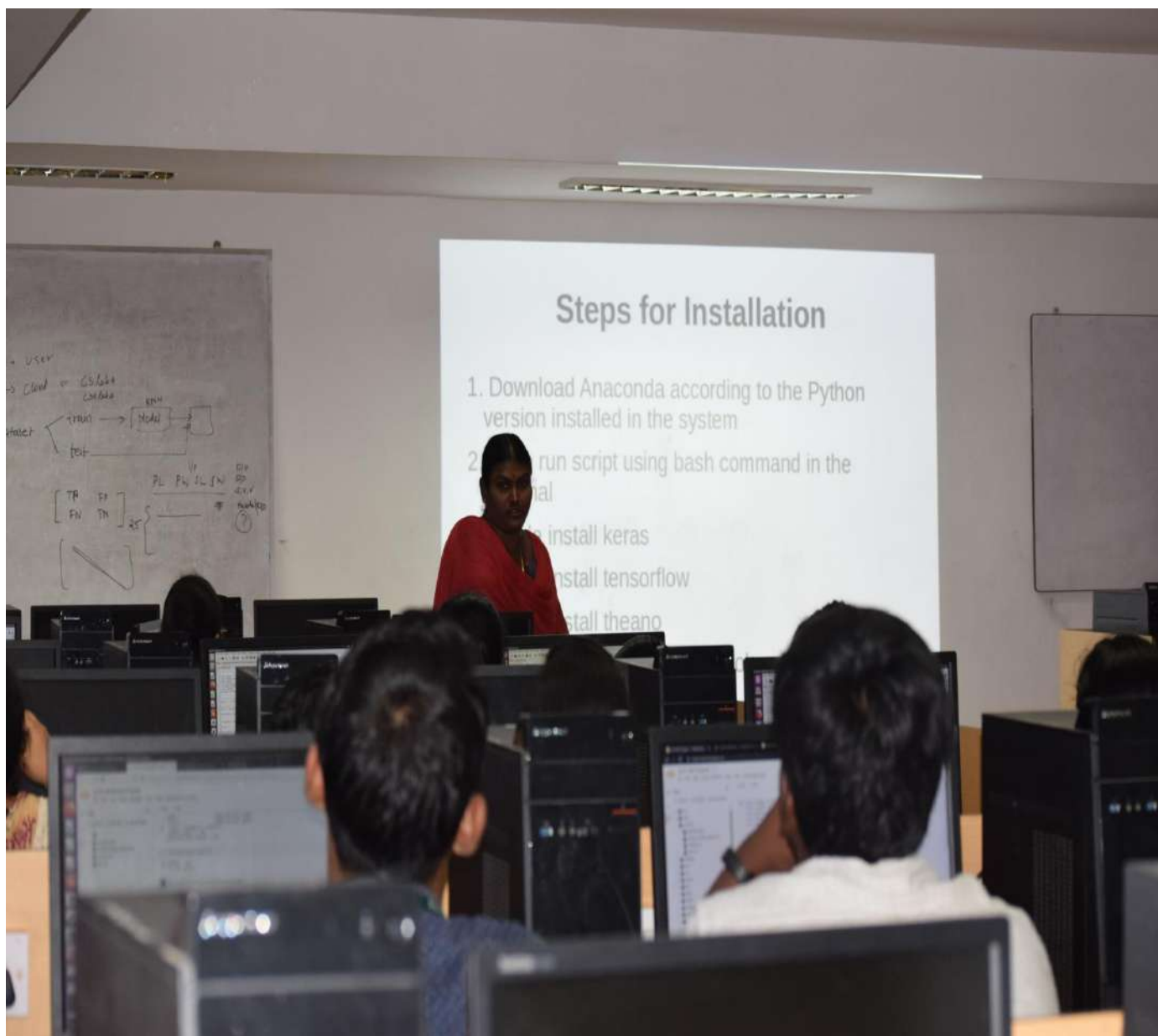

She concluded the session with basic concepts of Deep learning and Deep neural networks

Day 2 : March 12,2020

Day 2 sessions were handled by the resource persons from Hexaware Technologies Limited, Siruseri, Chennai.

Ms. V. Rajalakshmi, AP/CS introduced the resource person of Session 1 - Mr. A. Soundarapandian, Head - Data Science Practice, Business Intelligence and Analytics, Hexaware Technologies Ltd., Siruseri, Chennai.
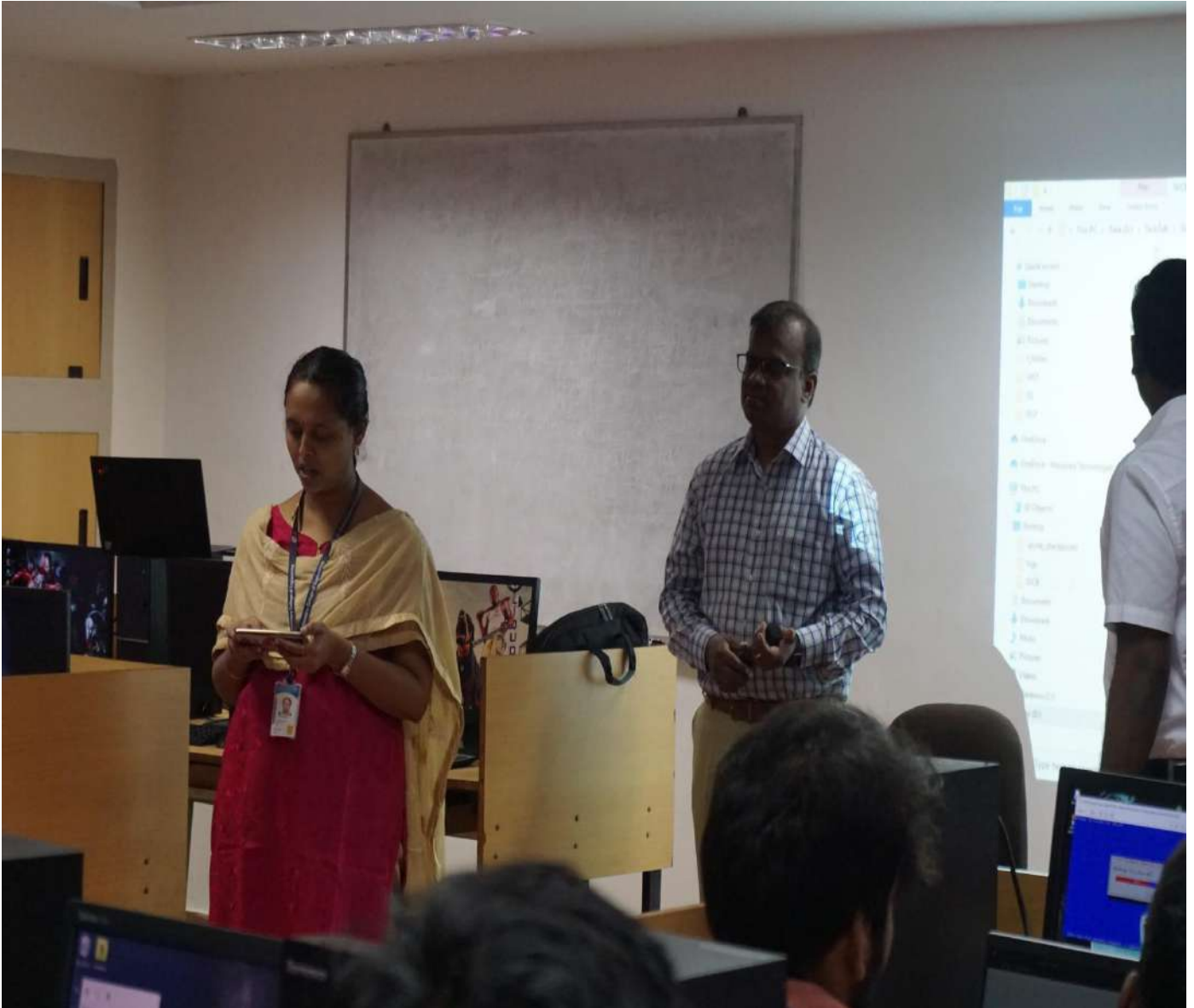
Mr. A. Soundarapandian delivered a talk on AI/ML Introduction and Evolution of Machine Learning till Deep Learning. He demonstrated with videos the role of Artificial Intelligence in Sports, Medicine, Engineering, Agriculture and Entertainment.
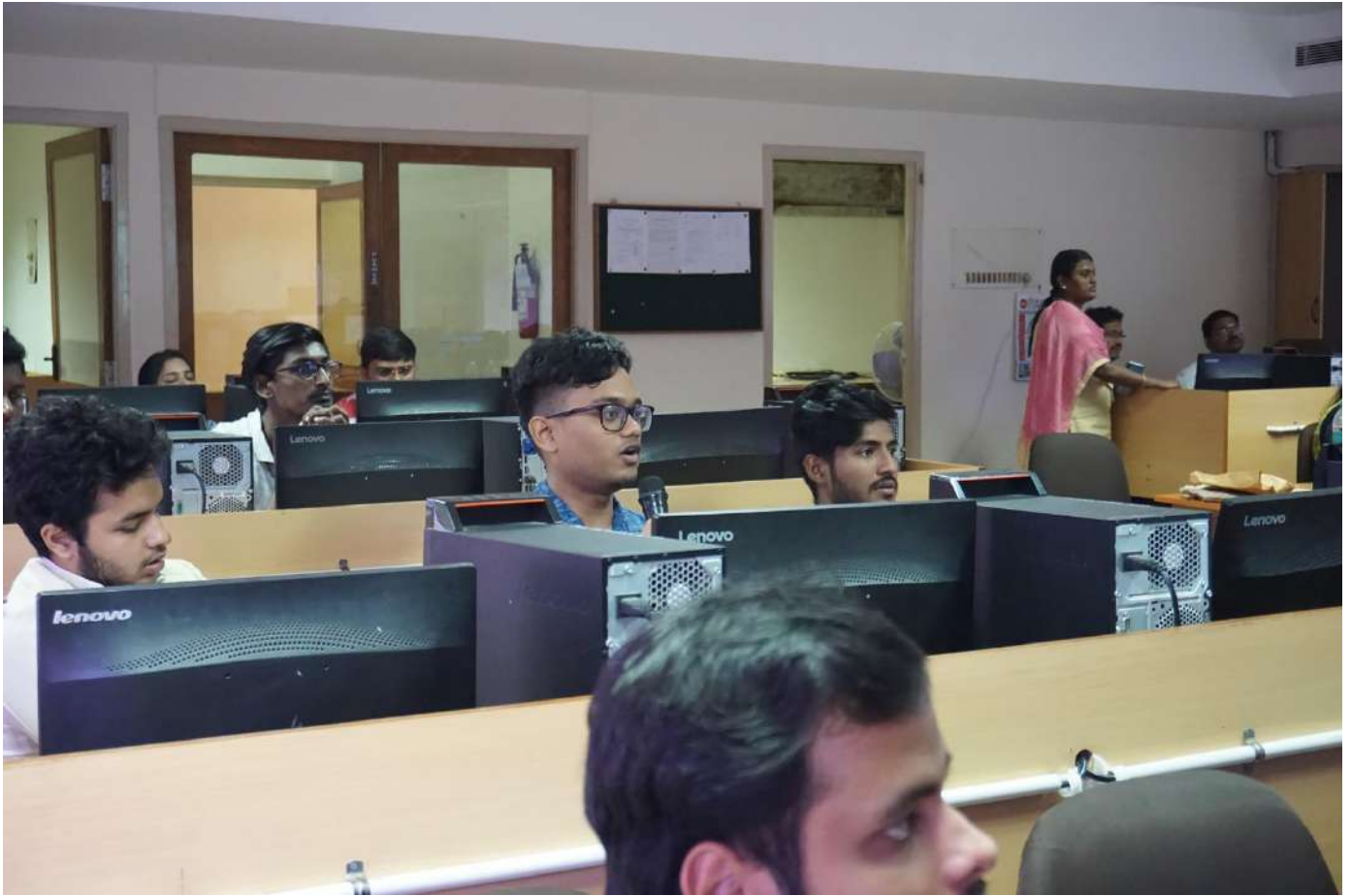
AI in sports

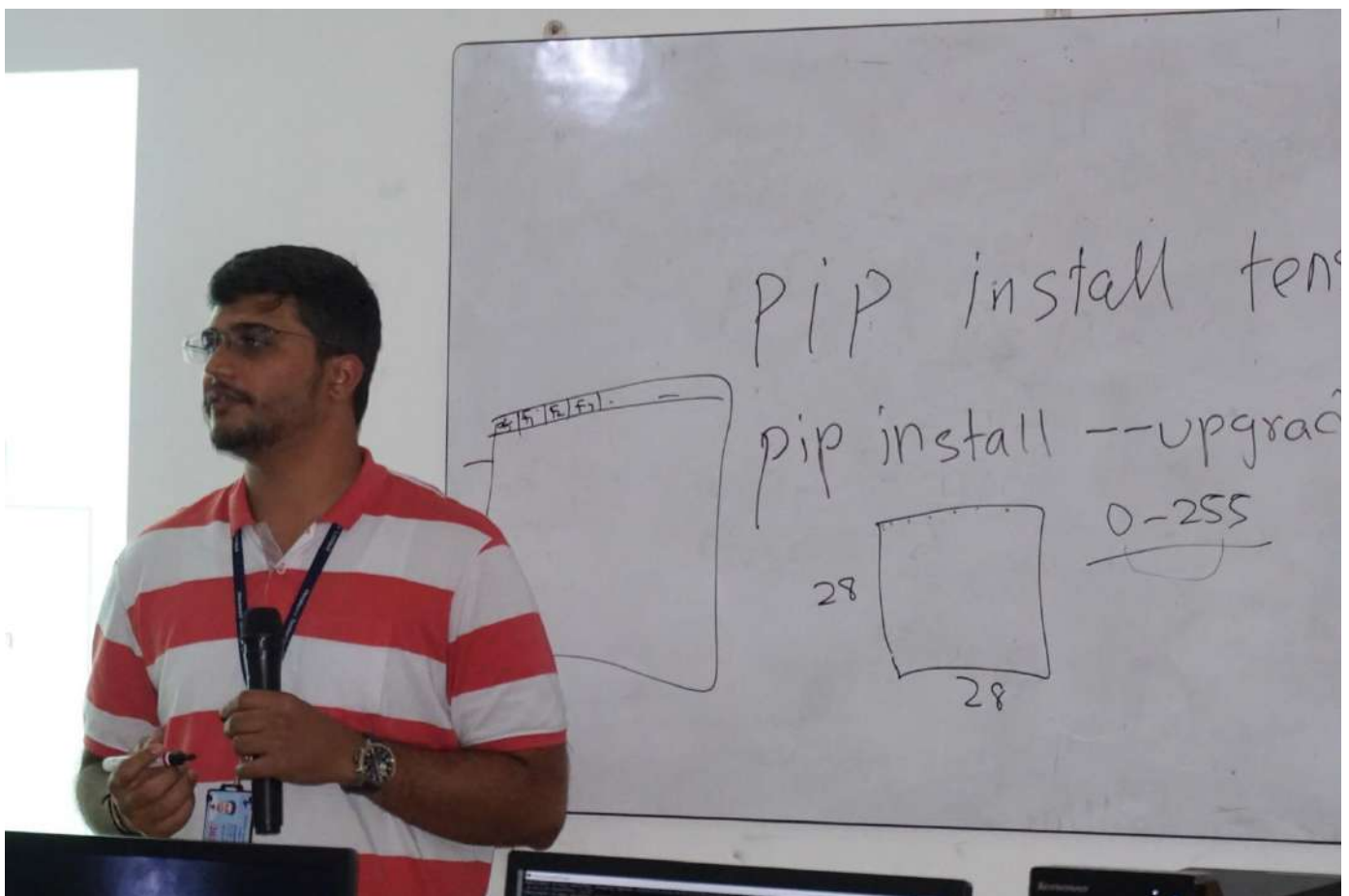AI ML IoT Bat
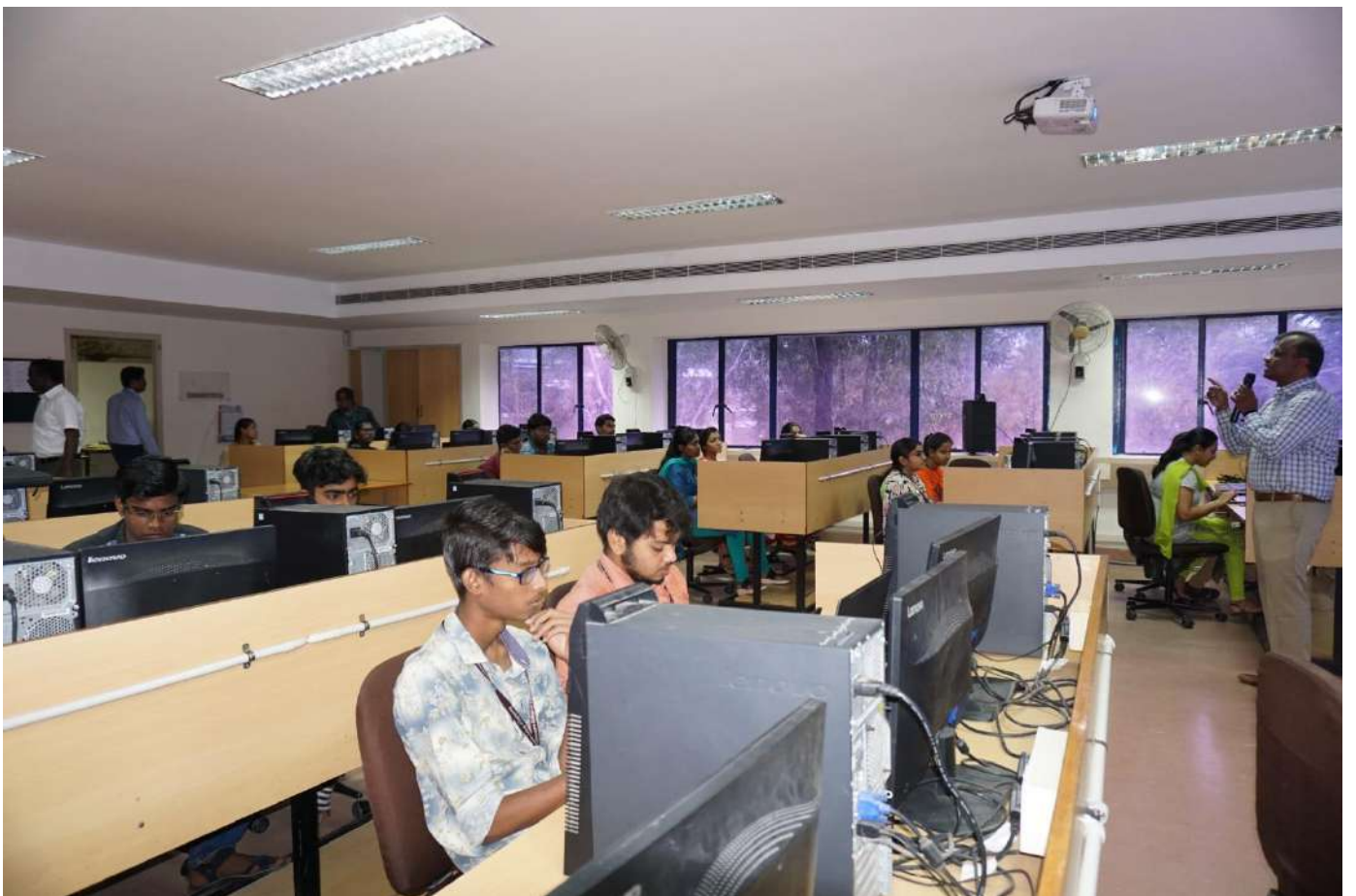
AI in agriculture

AI in precision agriculture
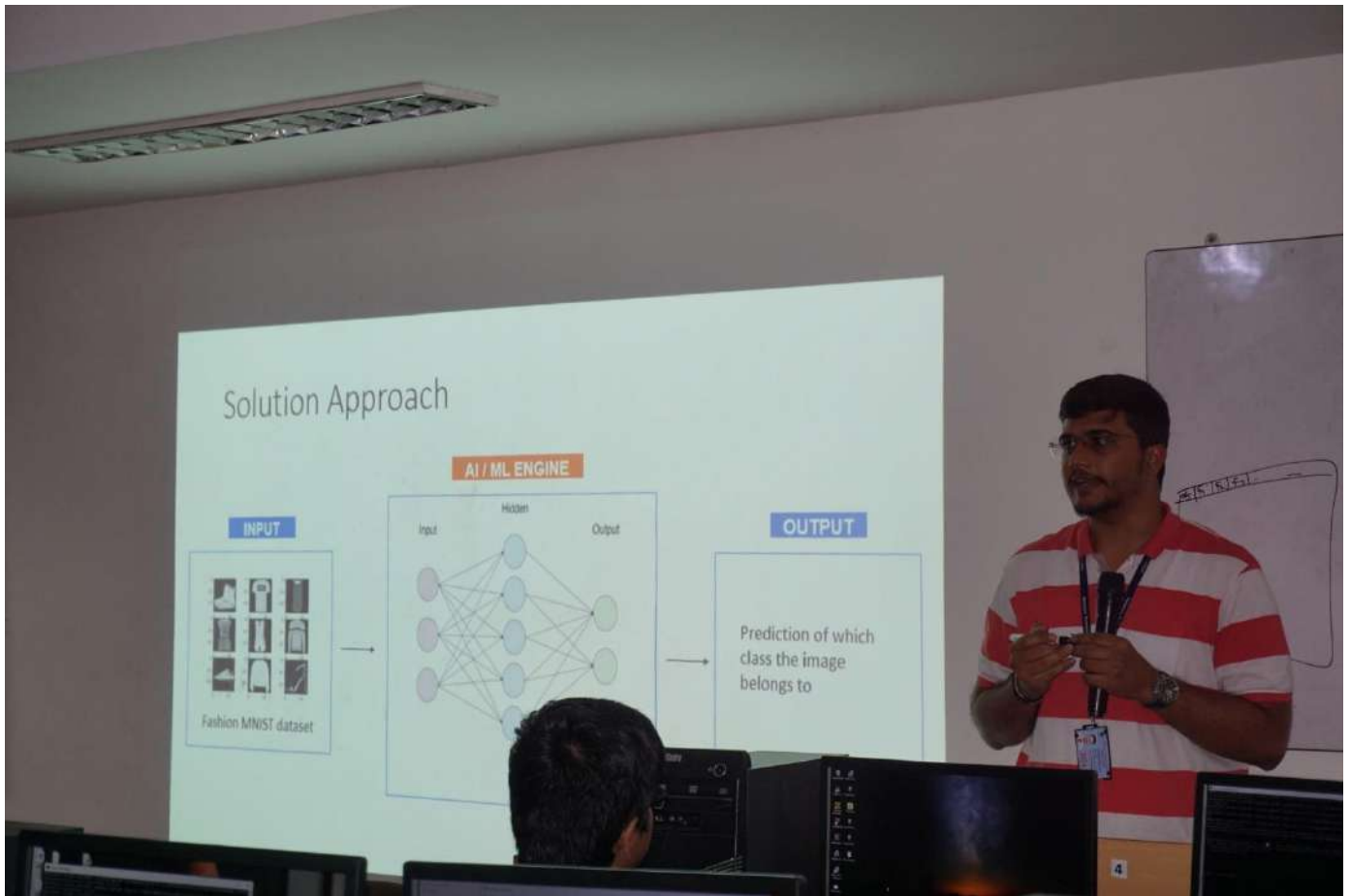
- Worldwide, agriculture is a $5 trillion industry
- Earth's population is expected to reach 10 billion by 2050
- Need to increase agricultural production by 70% to feed all the inhabitants
- In West Kenya, AI has helped farmers increase their annual yields of corn from an average of 540kgs to 810kgs (50% increase)

The participants were highly interactive throughout the session.

Dr.R.Jayabhaduri introduced the speaker for the second session Mr. Anuroop Pratap, System Analyst, Business Intelligence and Analytics, Hexaware Technologies Ltd., Siruseri, Chennai. Mr. Anuroop Pratap talked about various Convolutional Neural Network architectures for classification problem.

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He explained clearly how CNN does prediction task for MNIST dataset.

He talked about various optimizers and activation functions used in CNN. The session was highly interactive.

Session 3 was on "Transfer Learning" by Ms. A. Pravalika, Senior Software Engineer, Business Intelligence and Analytics, Hexaware Technologies Ltd., Siruseri, Chennai. Dr. R. Jayabhaduri introduced the resource person.

Ms. A. Pravalika gave a gentle introduction to Transfer Learning, Neural Information Processing Systems (NIPS) and illustrates the differences between traditional machine learning and transfer learning. She made the participants to understand how transfer learning enables reusing existing knowledge for new related tasks.
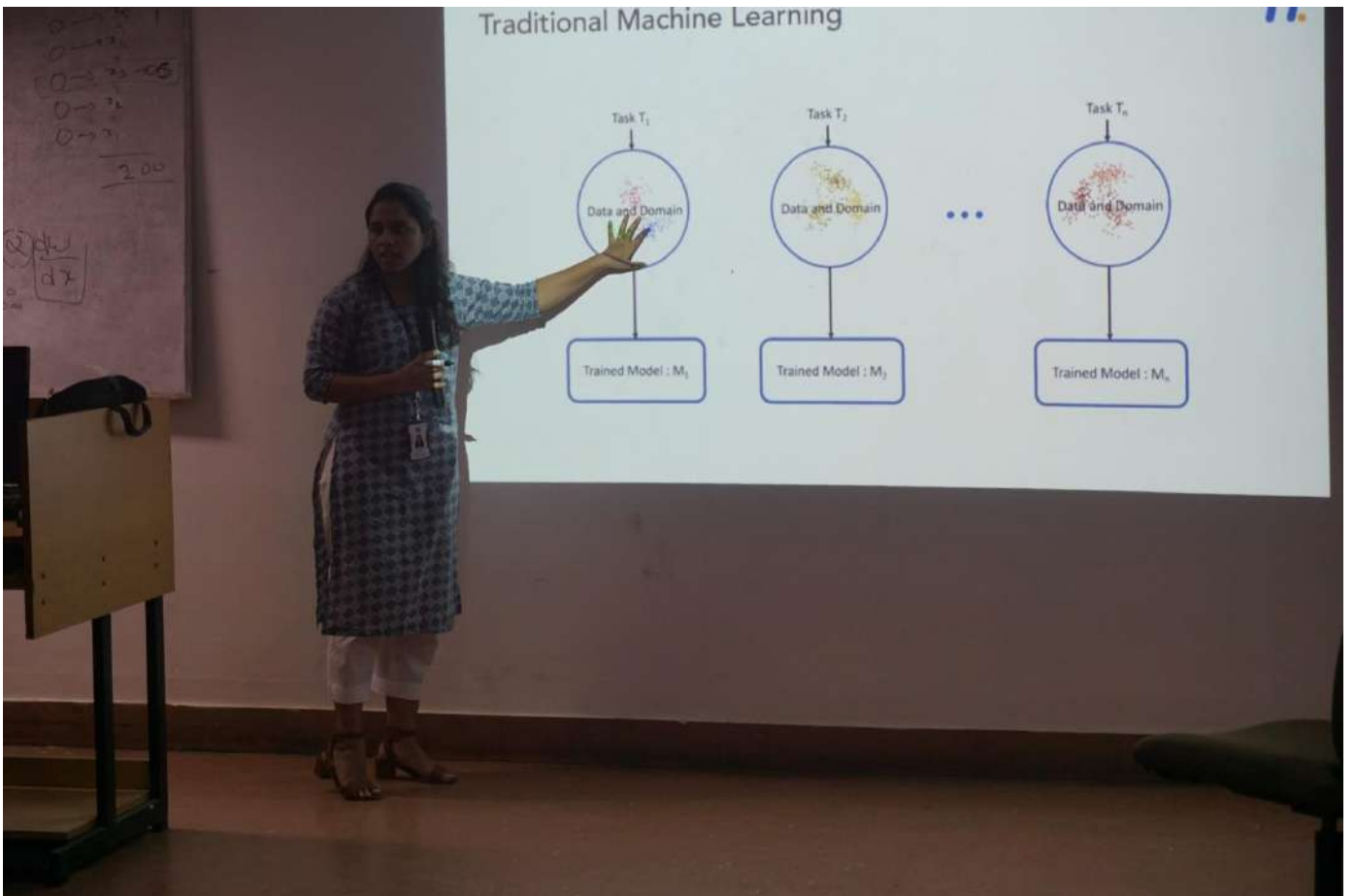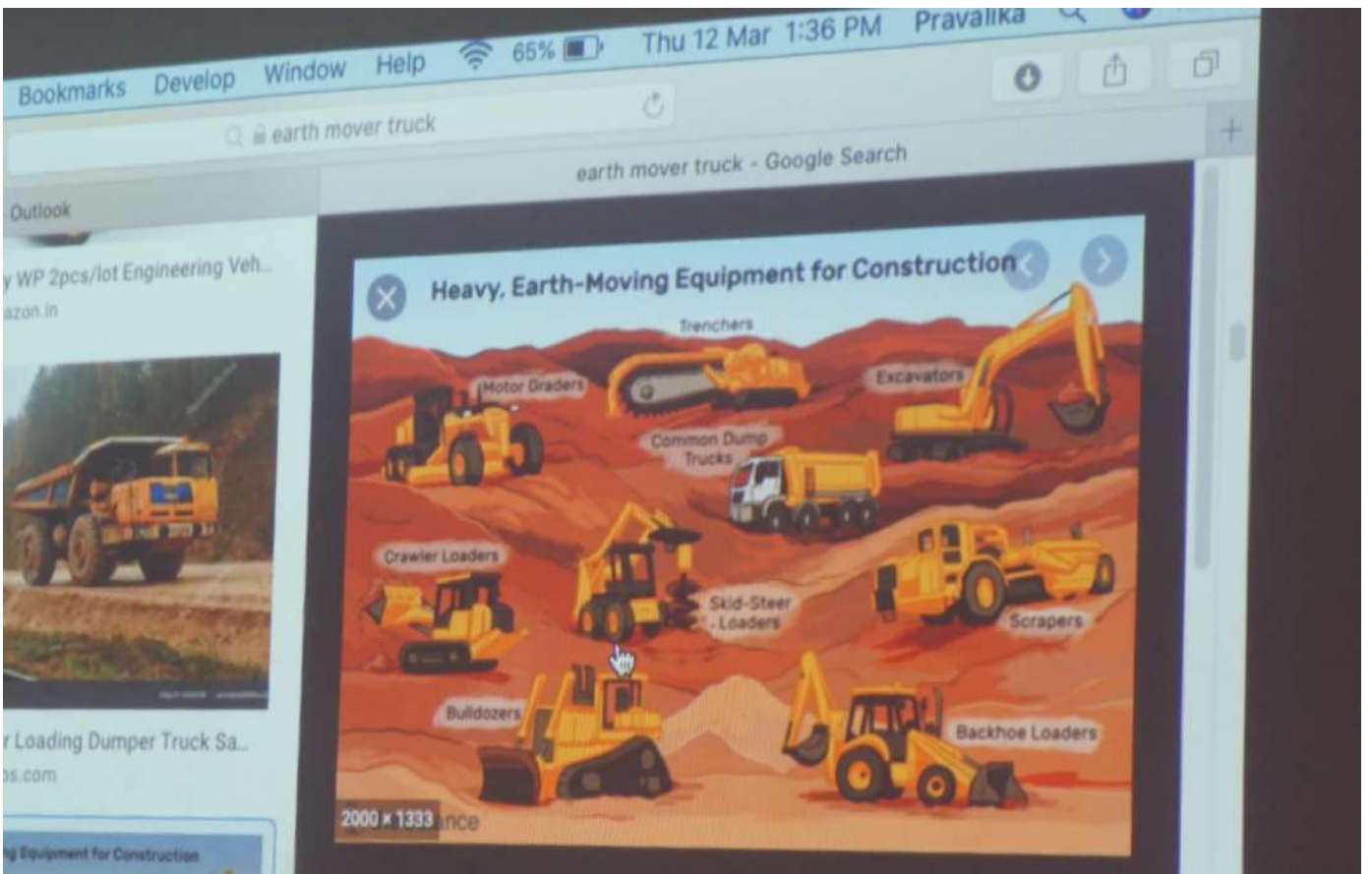
Dr.N.M.Balamurugan introduced Mr. Viraj Shirsekar, System Analyst, Business Intelligence and Analytics,Hexaware Technologies Ltd., Siruseri, Chennai for the last session. Mr. Viraj Shirsekar started his session by giving gentle introduction to Reinforcement Learning.

He explained clearly how does reinforcement learning differ from supervised and unsupervised learning paradigms. He demonstrated how Reinforcement learning plays a major role in Game Playing like Tic-Tac-Toe, Chess and Go. Apart from Reinforcement learning, he also focussed on high-level Generative Adversarial Network (GAN) for developing real-time applications.

He concluded his session by demonstrating Tic-Tac-Toe game, Cart-Pole and Tensor Board to realize how Reinforcement learning acts as the Science of Decision Making.
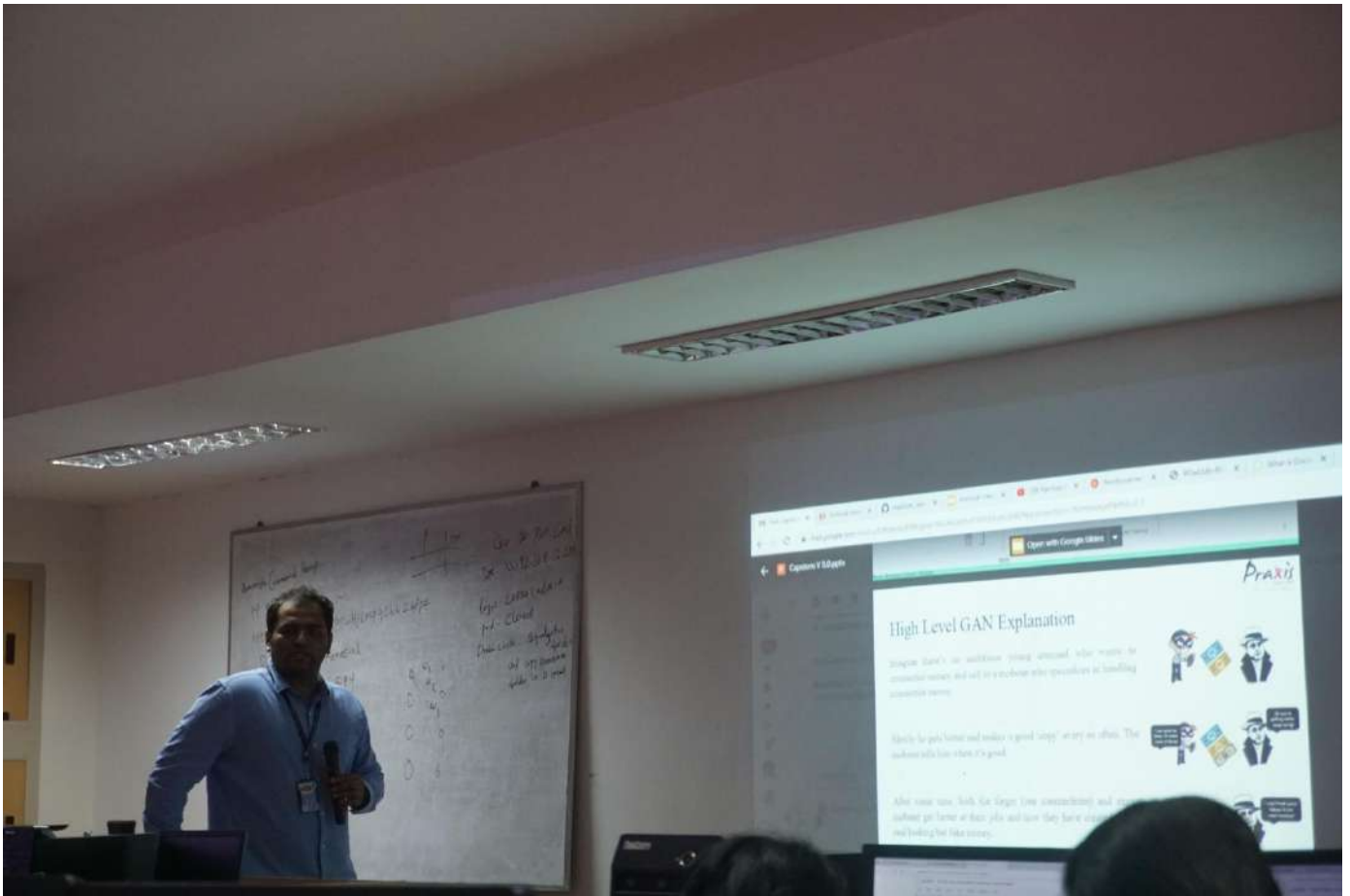
The National Workshop attracted a heterogeneous group of 37 participants that encompassed UG students and Faculty members from our institute.

Participant details : Total - 43

S.No	Category	No of participants	Name of the Institution
1	Students	**II CSE – 15** **III CSE – 2** **II INT – 8** **III INT - 5**	Sri Venkateswara College of Engineering
2	Faculty	**5**	
3	Lab Instructors	**2**	
	Total	**37**	

The workshop was well received and appreciated by all participants. Online feedback was obtained from all participants.

Dr. R. Anitha, Convenor delivered valedictory address for the programme. Dr. R. Jayabhaduri delivered vote of thanks.

The photos of the workshop can be accessed from the link

https://photos.app.goo.gl/r5NX3XN48UeKaEdk7

APPENDIX

A. Resource Persons' Profile

I. Dr. N.M.Balamurugan

Dr. Balamurugan N M received the B.E. Degree in Computer Science and Engineering from Madurai Kamaraj University, the M.E & Ph.D. Degrees in Network Engineering from Anna University, Chennai. He is currently an Associate Professor with Sri Venkateswara college of Engineering Sriperumbudur, Chennai.

His research interests are involving Wired & Wireless Networks, Network Security, Computer Graphics, CAD, QoS and applications of Artificial Intelligence. He has published two patents in the field of AI and IoT. He has guided hand full of UG, PG & SIH projects and published in the international journals and conferences.

He taught the following subjects to SVCE students: Information Retrieval Techniques, Computer Graphics, Computer Networks, Object oriented programming, Internet Programming, Mobile Computing, C# and .NET framework, Cloud Computing, Security Practices, Information Security, Cryptography and Network Security.

II. Ms. V.Rajalakshmi

Ms. V.Rajalakshmi received her B.Tech Degree in Information Technology from Madras University and the M.E Degree in Computer Science and Engineering from Anna University, Chennai. She is currently pursuing PhD in the area of Machine learning. She is currently an Assistant Professor in Sri Venkateswara college of Engineering Sriperumbudur, Chennai.

Her research interest is Machine learning.

She taught the following subjects to SVCE students: Object Oriented Programming, Multicore Architectures and Programming, Design and Analysis of Algorithms, Programming Paradigms, Programming and Data Structures, Theory of Computation, Web Technology, Data Structures, Operating System, Principles of Compiler Design, Fundamentals of Computing & Programming, Computer Architecture, System Software and Internet Programming.

III. Dr. R.Jayabhaduri

Dr. R.Jayabhaduri is an Associate Professor of Computer Science at Sri Venkateswara College of Engineering, Chennai. She received her B.E. and M.E. degrees in Computer Science and Engineering from Mepco Schlenk Engineering College, Sivakasi, India, in 2001 and 2003, respectively. She received her Ph.D. degree in Computer Science and Engineering from Anna University, Chennai, in 2016. She has been in academia since May 2003.

Her research interests include Single-objective optimization, Artificial Intelligence, Evolutionary Algorithms, Soft Computing techniques. Her teaching interests are Artificial Intelligence, Information Retrieval, Cryptography and Network Security. She has published 3 papers in journals and 6 papers in international conferences.

She is a life member of ISTE. She has organized and has been part of conducting several workshops and Faculty Development Programmes at SVCE.

IV. Mr. A. Soundarapandian

A Soundarapandian | Head - Data Science practice @ Hexaware Technologies Ltd

Highly passionate about statistical concepts and in applying it for the development of humanity.

Played different roles in the industry over the past 20+ years right from the Line Engineer, Quality Assurance Lead, Data Analysts, Junior Data Scientist, Project Manager, Analytics Center of Excellence incubation and Lead - Data Science Practice.

Involved in multiple technologies focusing Statistical Process Control, Machine Learning and Artificial Intelligence. Tools are ranging from Minitab, IBM SPSS Modeler, R, Python, RapidMiner, Knime, Clarabridge, Azure ML services, AWS Sagemaker and IBM Watson.

Actively participated in 75+ Machine Learning solutions cutting across various domains including Education, Retail, Manufacturing, Travel & Transportation, Banking and Financial Services, Healthcare and Insurance.

Currently involved with passion in applying AI / ML techniques on the data ingestion, data management and visualization using Deep Learning Methods.

V. Mr. Anuroop Pratap

System Analyst, Business Intelligence and Analytics, Hexaware Technologies Ltd.

- **Expert in Retail analytics and customer segmentation**
- **Strong in NLP and Text based analytics**
- **Recently involved in Clinical Trial document classification that involves CNN**

VI. Ms. A. Pravalika

Senior Software Engineer, Business Intelligence and Analytics, Hexaware Technologies Ltd.
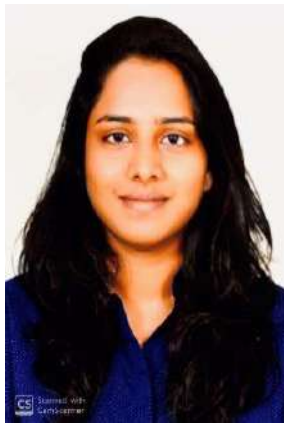
- **Budding Data Scientist at Hexaware**
- **Technically strong in R & Python with respect to Data Science**
- **Reviewer of "Ensemble Machine Learning Cookbook" which is Published by Packt publishers (Birmingham, UK)**

VII. Mr. Viraj Shirsekar

System Analyst, Business Intelligence and Analytics,

Hexaware Technologies Ltd.

- **Aspiring Data Scientist at Hexaware**
- **Passionate on image recognition and Video Analytics**
- **Involved in recreating human face by taking side view pictures using Generative networks**

C. Online Feedback Form

https://forms.gle/bnwHj8mpqoWW24fp7