RTU (ATU) TEQIP-III

Sponsored

Faculty Development Programme

On

"Deep Learning for Medical Data Analysis"

20th – 24th December 2020

Organized by

Rajasthan Technical University, Kota

&

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Host Institute

Department of Computer Science & engineering

and

Department of Information Technology

Swami Keshvanand Institute of Technology,
Management & Gramothan, Ramnagaria,
Jagatpura, Jaipur – 302017
Web: www.skit.ac.in

A
Report
on
Five Days
Faculty Development Program
20th-24th December 2020

Sponsored by TEQIP III

RTU (ATU) TEQIP-III Coordinator
Prof. (Dr.) Dhirendra Mathur

RTU Event Coordinator
Dr. Harish Sharma
Mrs. Nirmala Sharma

Host Institute Coordinators:
Mr. Sunil Dhankhar, Associate Professor
Ms. Anjana Sangwan, Associate Professor
Dr. Sunita Gupta, Associate Professor
Ms. Dolly Mittal, Assistant Professor

Organized By

Rajasthan Technical University, Kota
&
Swami Keshvanand Institute of Technology Management &Gramothan, Jaipur

Host Institute

Department of Computer Science & Engineering and Information Technology
Swami Keshvanand Institute of Technology Management &Gramothan, Jaipur

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1. About TEQIP-III:-

The project, third phase of Technical Education Quality Improvement Program (referred to as TEQIP-III) is fully integrated with the twelfth five-year plan objectives for Technical Education as a key component for a improving the quality of engineering education in existing institutions with a special consideration for low income states and special category state and support to strengthen few affiliated technical universities to improve their policy, academic and management practices.

2. About Rajasthan Technical University:-

Rajasthan Technical University (RTU) is located at Kota in the state of Rajasthan. It was established in 2006 by the Government of Rajasthan. The university currently affiliated about 129 engineering colleges, 04 B. Arch, 41 MCA Colleges, 95 MBA Colleges, 44 M. Tech. Colleges and 03 Hotel Management and Catering Institute. The University aims to provide quality technical education which may help Rajasthan in its technical development and will boost technical environment in the country.

3. About SKIT:-

Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT), inspired from the learnings of Swami Keshvanand, was established in the year 2000 by Technocrats and Managers Society for Advanced Learning. Today, the Institute is recognized as one of the centers of academic excellence in Northern India. The Institute is affiliated to Rajasthan Technical University, Kota for offering Ph. D., Postgraduate and Graduate Courses in Engineering and Management.

Located in the Pink City Jaipur, which is a blend of traditional history and modern outlook, SKIT is putting in efforts for making industry ready engineers and managers through effective Industry –Institute Interface. Apart from University curriculum, SKIT also pursues activities for research and development in various fields.

Students joining the institute share the box full of opportunities for professional and personal development through an environment of practical orientation, industrial interaction and student led activities which help the students to develop good communication skills, integrated personality and greater competitive spirit.

Vision

To promote higher learning in advanced technology and industrial research to make our country a global player

Mission

To promote quality education, training and research in field of Engineering by establishing effective interface with industry and to encourage faculty to undertake industry sponsored projects for students.

Quality Policy

We are committed to 'achievement of quality' as an integral part of our institutional policy by continuous self-evaluation and striving to improve ourselves.

Institute would pursue quality in

• All its endeavours like admissions, teaching- learning processes, examinations, extra and co-curricular activities, industry institution interaction, research & development, continuing education, and consultancy.

• Functional areas like teaching departments, Training & Placement Cell, library, administrative office, accounts office, hostels, canteen, security services, transport, maintenance section and all other services."

4. Committees for the Workshop:-

ADVISORS

Shri Jaipal Meel, Director, SKIT

Dr. S.L. Surana, Director (Academics), SKIT

Mrs. Rachna Meel, Registrar, SKIT

Dr. Ramesh Kumar Pachar, Principal, SKIT

Dr. Anil Chaudhary, HOD (IT), SKIT

Dr. Mukesh Kumar Gupta, HOD (CS), SKIT

RTU (ATU) TEQIP-III COORDINATOR

Dr. Dhirendra Mathur

RTU EVENT COORDINATOR

Dr. Harish Sharma

Mrs. Nirmala Sharma

Rajasthan Technical University, Kota

HOST INSTITUTE EVENT COORDINATOR

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Associate Professor, Department of CSE
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Email: dolly.mittal@skit.ac.in

5. OBJECTIVE OF FDP

Deep learning also known as hierarchical learning or deep structured learning, is a type of machine learning that uses a layered algorithmic architecture to analyze data. Deep learning has been effectively applied in many fields and has outperformed most of the machine learning methods. Under this background, deep learning based medical data

analysis emerged. deep learning has demonstrated superior performances in solving many problems in various fields of medicine compared with other machine learning methods. Participants will Learn to how deep learning has surpassed traditional machine learning techniques, like a professional at this workshop.

COURSE PROGRAM

- The program is split into lectures and online hands-on sessions.
- Assignment for enhanced learning
- Online Hands-on experience on basic and advanced topics
- Interaction and learning with experts from academia and industry
- Certificate to the participants by TEQIP III and RTU Kota.

6.CONTENT OF THE FDP

- Introduction to Deep Learning and its Applications
- Hands on Session Python Programming, Numerical Computation with Numpy
- Scientific Computation with Scipy Data Visualization with Matplotlib
- Research Issues in Medical Data Analysis
- Basics of Tensorflow and Keras, Building Computational Graphs and Matrix computations using Tensorflow
- Basics of Artificial Neural Network
- Convolutional Neural Networks
- Implementation of Single-layer Perceptron Network and Multilayered perceptron Neural Networks with Tensorflow and Keras
- Understanding CNN Architecture using Tensorflow and keras
- Brain Computer Interface and its Application

- Image Classification Analysis with Convolutional Neural Networks and ANN in Tensorflow and Keras
- Transfer Learning using VGGNet, Resnet and Inception Net
- Recurrent Neural Networks
- Deep Learning approach for Image classification using Tensorflow Part-II
- Natural Language Processing

OUTCOMES OF THE FDP

Faculties, Researchers have

- Established basic concepts and key components of Deep Learning
- A close look towards the development of Deep Learning and their integrations with different Apps.
- Learned Effective usage Deep Learning for Medical Data Analysis deployment of those in different sectors.
- Analyzed the abilities & limits of the latest techniques and with this they will guide the students regarding the same.
- Understand the concepts of developing Deep Learning for Medical Data Analysis
- Learned to design and apply effective techniques to create Deep Learning for Medical Data Analysis applications under in-house expert guidance.
- Became more familiar with industry environment and reduced the technology gap between Industry and Institute.

7.EXPERT DETAILS

1. **Mr. Abhinav Mishra**
   Data Scientist,
   Smiths Detection Systems Private Limited, Bangalore

2. **Mr Shivam Singh**
   Data Scientist
3. **Mr Sahil Middha**
   Data Scientist
4. **Dr. Sunil Pathak**
   Amity University Jaipur
5. **Mr. Gaurav Singhal,**
   Assistant Professor, Bennett University, Greater Noida, UP
6. **Dr. Pramod Gaur**
   Assistant Professor, BITS PILANI Dubai Campus, Dubai, UAE.
7. **Dr Basant Agarwal,**
   Assistant Professor, IIIT, Kota
8. **Mr. Yogendra ,**
   Assistant Professor, bansthali vidhyapith

RESOURCE PERSON

The Various sessions of the FDP will be preceded by the experts from reputed institutes and industries.

REGESTRATION FEE

There is No Registration Fee.

TARGETED AUDIENCE: Faculty of various engineering institutes affiliated to Rajasthan Technical University, Bikaner Technical University and other academic institutes.

8.FDP SCHEDULE

Day& Date	10.00 – 11.15	11.15 – 12.30	13.30 – 14.45
Sunday 20.12.2020	Introduction to Deep Learning and its Applications Mr. Abhinav Mishra Data Scientist, Smiths Detection Systems Private Limited, Bangalore	Hands on Session Python Programming, Numerical Computation with Numpy Mr Shivam Singh Data Scientist	Scientific Computation with Scipy Data Visualization with Matplotlib Mr Sahil Middha Data Scientist
Monday 21.12.2020	Research Issues in Medical Data Analysis Dr. Sunil Pathak Amity University Jaipur	Basics of Tensorflow and Keras, Building Computational Graphs and Matrix computations using Tensorflow Mr Sahil Middha Data Scientist	Basics of Artificial Neural Network Mr Shivam Singh Data Scientist
Tuesday 22.12.2020	Convolutional Neural Networks Mr. Gaurav Singhal, Assistant Professor, Bennett University, Greater Noida, UP	Implementation of Single-layer Perceptron Network and Multilayered perceptron Neural Networks with Tensorflow and Keras Mr Sahil Middha Data Scientist	Understanding CNN Architecture using Tensorflow and keras Mr Shivam Singh Data Scientist
Wednesday 23.12.2020	Brain Computer Interface and its Application Dr. Pramod Gaur Assistant Professor, BITS PILANI Dubai Campus, Dubai, UAE.	Image Classification Analysis with Convolutional Neural Networks and ANN in Tensorflow and Keras Mr. Yogendra,Assistant Professor,Bansthali Vidhyapith	Transfer Learning using VGGNet, Resnet and Inception Net Mr Shivam Singh Data Scientist
Thursday 24.12.2020	Recurrent Neural Networks Dr Basant Agarwal, Assistant Professor, IIIT, Kota	Deep Learning approach for Image classification using Tensorflow Part-II Mr. Yogendra,Assistant Professor,Bansthali Vidhyapith	Natural Language Processing Mr Shivam Singh Data Scientist

9.Workshop Brochure

FDP COMMITTEE

Chief Patron
Prof. R. A. Gupta
Hon'ble Vice-Chancellor, RTU

Patron:
Shri Raja Ram Meel, Patron, SKIT
Shri Surja Ram Meel, Chairman, SKIT

Advisor:
Shri Jaipal Meel, Director, SKIT
Prof. (Dr.) S. L. Surana, Director (Academics), SKIT
Mrs. Rachna Meel, Registrar, SKIT
Prof. (Dr.) Ramesh Kumar Pachar, Principal, SKIT
Prof.(Dr.)Mukesh Gupta,HOD (CSE),SKIT
Prof. (Dr.) Anil Chaudhary, HOD (IT), SKIT

RTU (ATU) TEQIP-III Coordinator:
Prof. (Dr.) Dhirendra Mathur

RTU Event Coordinator:
Dr. Harish Sharma
Mrs. Nirmala Sharma

Host Institute Coordinators:
Mr. Sunil Dhankhar, Associate Professor
Ms. Anjana Sangwan, Associate Professor
Dr. Sunita Gupta, Associate Professor
Ms. Dolly Mittal, Assistant Professor

RTU (ATU) TEQIP-III Committee:
Prof. D. K. Sambariya (Nodal Officer Procurement)
Dr. S. D. Purohit (Nodal Officer Finance)
Dr. Irum Alvi (Conference)
Mr. Santosh Sharma (Expert Lecture)
Mr. Anshul Bansal (GATE & Induction)
Mr. Dinesh Kumar (Workshop)

Organizing Committee:
Department of CSE & IT, SKIT, Jaipur

REGISTRATION

To join this FDP, you are requested to register your name by clicking the following registration link or scanning the QR Code:

https://forms.gle/5Z6PcQd1foTEqxGU6

Note:

- ✓ The FDP will be conducted through online platform.
- ✓ The registration for the FDP is on first cum first service basis.
- ✓ After fill the registration form, please join the Whatsapp group to receive workshop related information.
- ✓ E-Certificate will be provided to those faculty / students who will attend all the sessions and submit assignments including feedback of FDP.

CONTACT US

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Ms. Anjana Sangwan
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Dr. Sunita Gupta
Associate Professor, Department of IT
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Ms. Dolly Mittal
Assistant Professor, Department of IT
Mobile: 9829408543
Email: dolly.mittal@skit.ac.in

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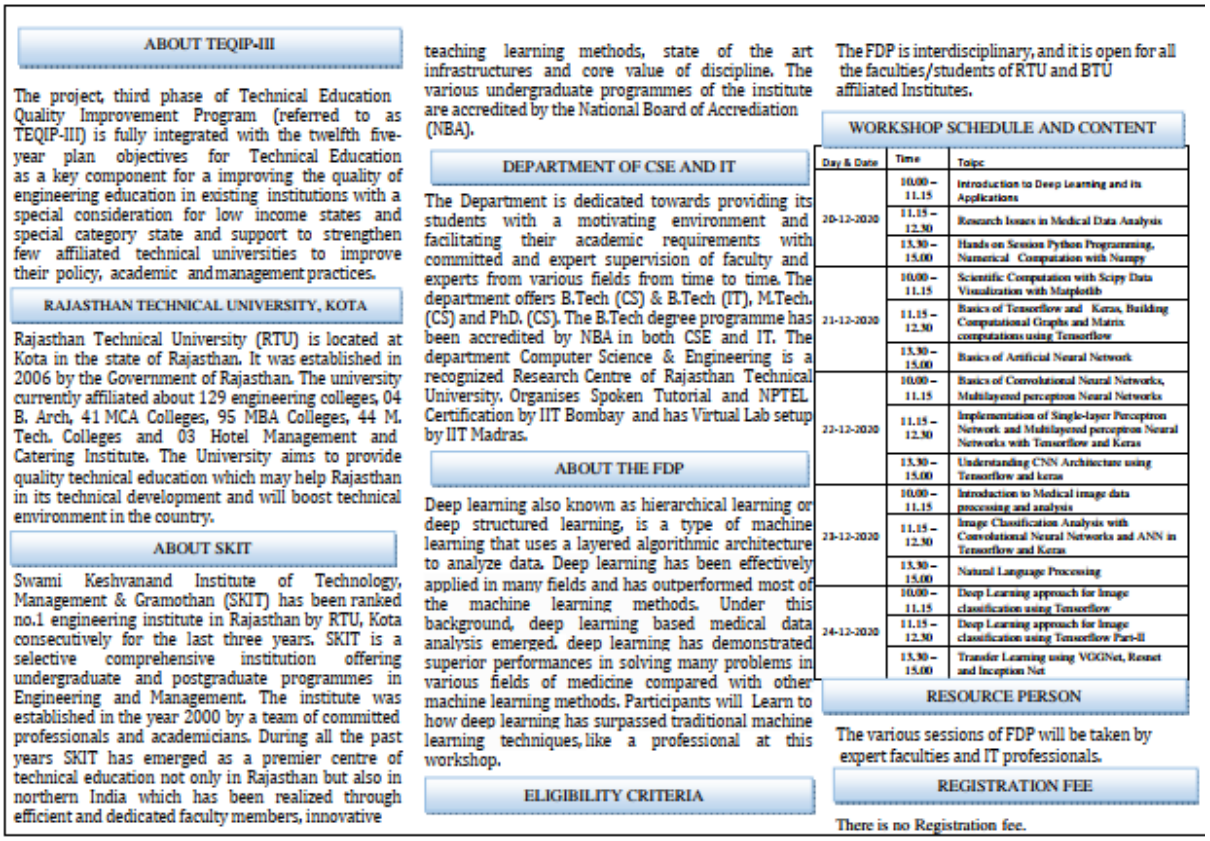
Department of Computer Science & engineering
and
Department of Information Technology

Swami Keshvanand Institute of Technology, Management & Gramothan, Ramnagaria, Jagatpura, Jaipur – 302017
Web: www.skit.ac.in



ABOUT TEQIP-III

The project, third phase of Technical Education Quality Improvement Program (referred to as TEQIP-III) is fully integrated with the twelfth five-year plan objectives for Technical Education as a key component for a improving the quality of engineering education in existing institutions with a special consideration for low income states and special category state and support to strengthen few affiliated technical universities to improve their policy, academic and management practices.

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Rajasthan Technical University (RTU) is located at Kota in the state of Rajasthan. It was established in 2006 by the Government of Rajasthan. The university currently affiliated about 129 engineering colleges, 04 B. Arch, 41 MCA Colleges, 95 MBA Colleges, 44 M. Tech. Colleges and 03 Hotel Management and Catering Institute. The University aims to provide quality technical education which may help Rajasthan in its technical development and will boost technical environment in the country.

ABOUT SKIT

Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT) has been ranked no.1 engineering institute in Rajasthan by RTU, Kota consecutively for the last three years. SKIT is a selective comprehensive institution offering undergraduate and postgraduate programmes in Engineering and Management. The institute was established in the year 2000 by a team of committed professionals and academicians. During all the past years SKIT has emerged as a premier centre of technical education not only in Rajasthan but also in northern India which has been realized through efficient and dedicated faculty members, innovative teaching learning methods, state of the art infrastructures and core value of discipline. The various undergraduate programmes of the institute are accredited by the National Board of Accrediation (NBA).

DEPARTMENT OF CSE AND IT

The Department is dedicated towards providing its students with a motivating environment and facilitating their academic requirements with committed and expert supervision of faculty and experts from various fields from time to time. The department offers B.Tech (CS) & B.Tech (IT), M.Tech. (CS) and PhD. (CS). The B.Tech degree programme has been accredited by NBA in both CSE and IT. The department Computer Science & Engineering is a recognized Research Centre of Rajasthan Technical University. Organises Spoken Tutorial and NPTEL Certification by IIT Bombay and has Virtual Lab setup by IIT Madras.

ABOUT THE FDP

Deep learning also known as hierarchical learning or deep structured learning, is a type of machine learning that uses a layered algorithmic architecture to analyze data. Deep learning has been effectively applied in many fields and has outperformed most of the machine learning methods. Under this background, deep learning based medical data analysis emerged. deep learning has demonstrated superior performances in solving many problems in various fields of medicine compared with other machine learning methods. Participants will Learn to how deep learning has surpassed traditional machine learning techniques, like a professional at this workshop.

ELIGIBILITY CRITERIA

The FDP is interdisciplinary, and it is open for all the faculties/students of RTU and BTU affiliated Institutes.

WORKSHOP SCHEDULE AND CONTENT

Day & Date	Time	Topic
20-12-2020	10.00 – 11.15	Introduction to Deep Learning and its Applications
	11.15 – 12.30	Research Issues in Medical Data Analysis
	13.30 – 15.00	Hands on Session Python Programming, Numerical Computation with Numpy
21-12-2020	10.00 – 11.15	Scientific Computation with Scipy Data Visualization with Matplotlib
	11.15 – 12.30	Basics of Tensorflow and Keras, Building Computational Graphs and Matrix computations using Tensorflow
	13.30 – 15.00	Basics of Artificial Neural Network
22-12-2020	10.00 – 11.15	Basics of Convolutional Neural Networks, Multilayered perceptron Neural Networks
	11.15 – 12.30	Implementation of Single-layer Perceptron Network and Multilayered perceptron Neural Networks with Tensorflow and Keras
	13.30 – 15.00	Understanding CNN Architecture using Tensorflow and keras
23-12-2020	10.00 – 11.15	Introduction to Medical image data processing and analysis
	11.15 – 12.30	Image Classification Analysis with Convolutional Neural Networks and ANN in Tensorflow and Keras
	13.30 – 15.00	Natural Language Processing
24-12-2020	10.00 – 11.15	Deep Learning approach for Image classification using Tensorflow
	11.15 – 12.30	Deep Learning approach for Image classification using Tensorflow Part-II
	13.30 – 15.00	Transfer Learning using VGGNet, Resnet and Inception Net

RESOURCE PERSON

The various sessions of FDP will be taken by expert faculties and IT professionals.

REGISTRATION FEE

There is no Registration fee.

10.Participant List

S.No	Email Address	Name	Designation	University/college Name
1	muzafar.rasool@islamicuniversity.edu.in	Dr. Muzafar Rasool Bhat	Assistant Professor (Senior Scale)	Islamic University of Science and Technology
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6	shanu.tripathi@skit.ac.in	Shanu Tripathi	Assistant Professor	Swami Keshvanand Institute of Technology, Management & Gramothan

7	glsaini86@gmail.com	G.L. Saini	Assistant Professor	Amity University Rajasthan
8	dharmendra.kumar@anandice.ac.in	Dharmendra Kumar	Assistant professor	Anand International College of Engineering, Jaipur
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10	nihar.ranjan@sharda.ac.in	Nihar Ranjan Roy	Associate Professor	Sharda University
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56	shalini.singhal@skit.ac.in	Shalini Singhal	Asst. Prof.	SKIT M&G Jagatpura
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59	amiya.pandafcs@kiit.ac.in	Dr. Amiya Ranjan Panda	Assistant Professor	Kiit university
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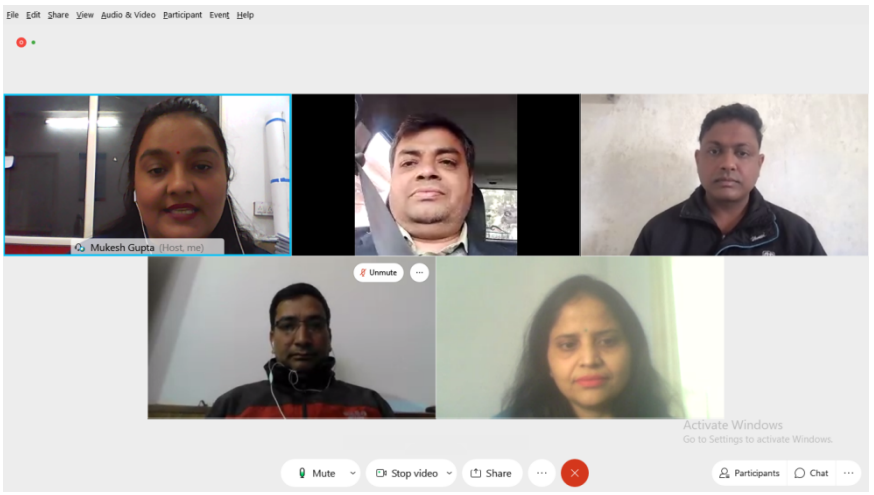
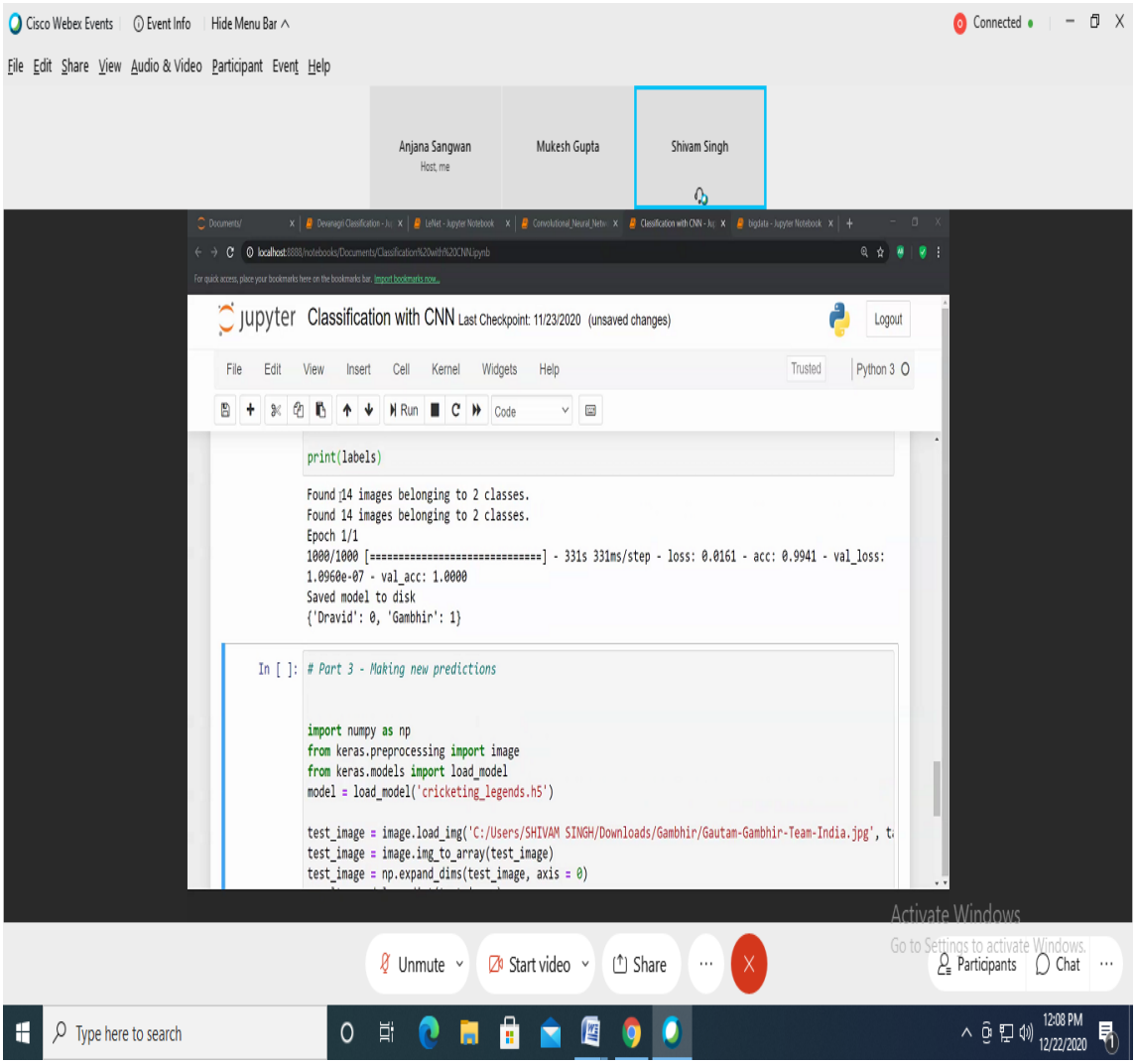
72	naveen@skit.ac.in	Naveen Jain	Asst prof	Skit
73	nidhi@skit.ac.in	Nidhi Srivastav	Associate Professor	SKIT

11. Glimpses of The FDP

EVENT PHOTOGRAPHS

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Event Info
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Anjana Sangwan
Host, me
Mukesh Gupta
Shivam Singh
jupyter Classification with CNN Last Checkpoint: 11/23/2020 (unsaved changes)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Code
print(labels)
Found 14 images belonging to 2 classes.
Found 14 images belonging to 2 classes.
Epoch 1/1
1000/1000 [==========] - 331s 331ms/step - loss: 0.0161 - acc: 0.9941 - val_loss: 1.0960e-07 - val_acc: 1.0000
Saved model to disk
{'Dravid': 0, 'Gambhir': 1}
In [ ]:
# Part 3 - Making new predictions
import numpy as np
from keras.preprocessing import image
from keras.models import load_model
model = load_model('cricketing_legends.h5')
test_image = image.load_img('C:/Users/SHIVAM SINGH/Downloads/Gambhir/Gautam-Gambhir-Team-India.jpg',
test_image = image.img_to_array(test_image)
test_image = np.expand_dims(test_image, axis = 0)
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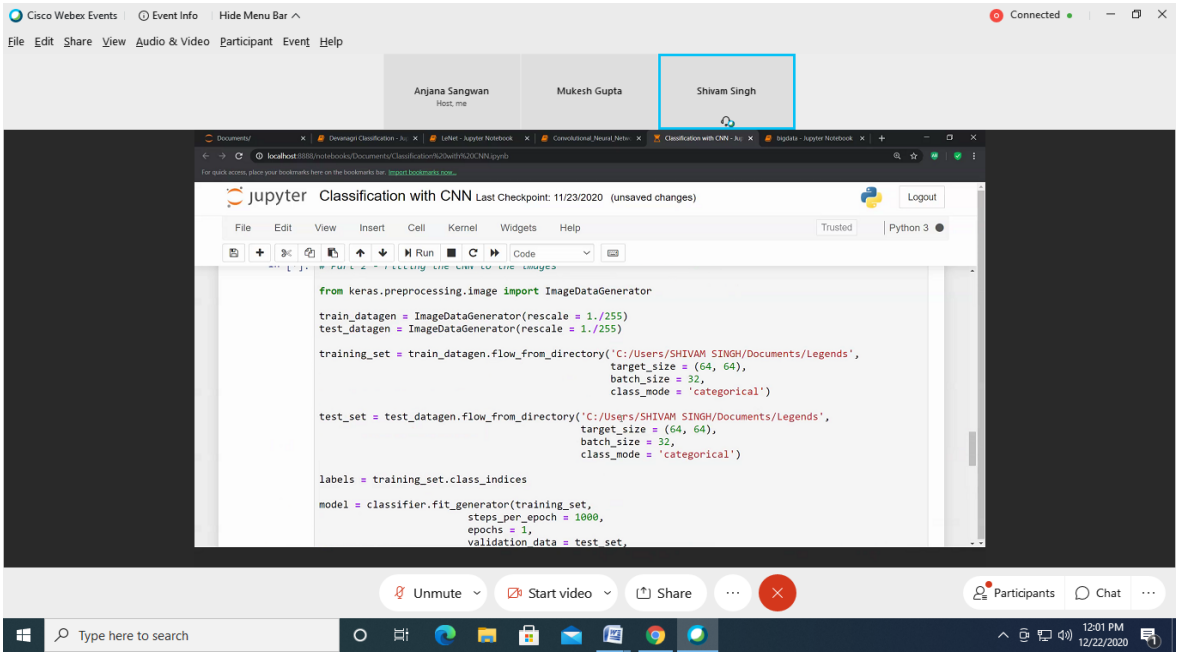
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Python 3
Run
Code
from keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale = 1./255)
test_datagen = ImageDataGenerator(rescale = 1./255)
training_set = train_datagen.flow_from_directory('C:/Users/SHIVAM SINGH/Documents/Legends',
target_size = (64, 64),
batch_size = 32,
class_mode = 'categorical')
test_set = test_datagen.flow_from_directory('C:/Users/SHIVAM SINGH/Documents/Legends',
target_size = (64, 64),
batch_size = 32,
class_mode = 'categorical')
labels = training_set.class_indices
model = classifier.fit_generator(training_set,
steps_per_epoch = 1000,
epochs = 1,
validation_data = test_set,
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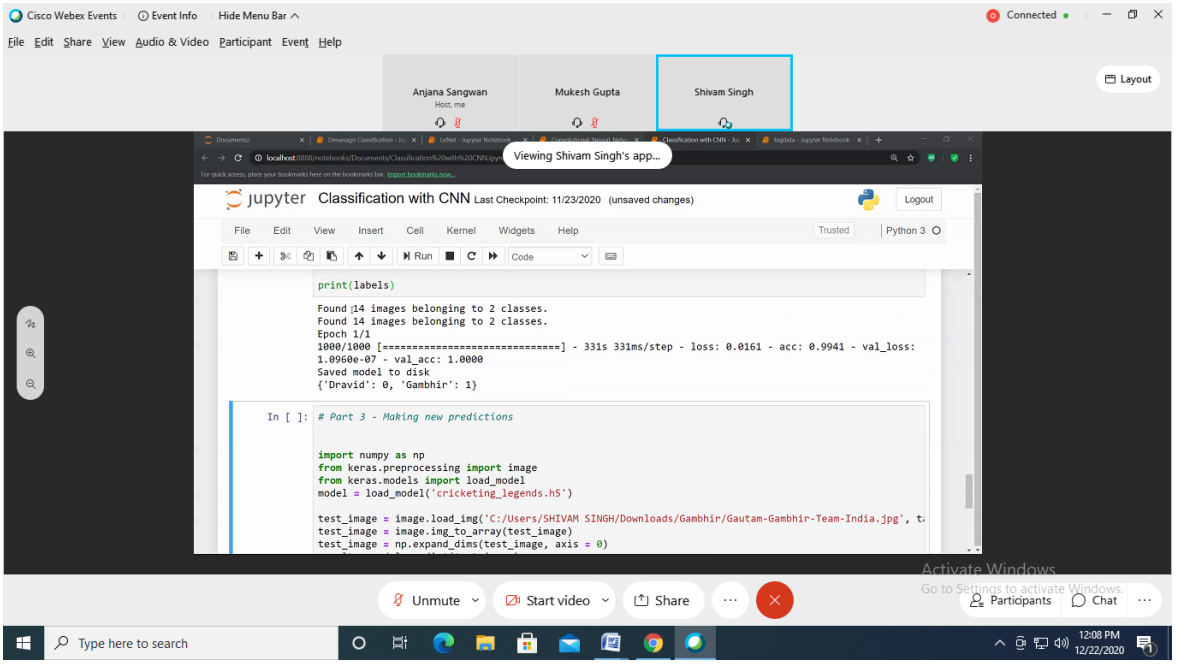
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Python 3
Run
Code
print(labels)
Found 14 images belonging to 2 classes.
Found 14 images belonging to 2 classes.
Epoch 1/1
1000/1000 [==========] - 331s 331ms/step - loss: 0.0161 - acc: 0.9941 - val_loss: 1.0960e-07 - val_acc: 1.0000
Saved model to disk
{'Dravid': 0, 'Gambhir': 1}
In [ ]:
# Part 3 - Making new predictions
import numpy as np
from keras.preprocessing import image
from keras.models import load_model
model = load_model('cricketing_legends.h5')
test_image = image.load_img('C:/Users/SHIVAM SINGH/Downloads/Gambhir/Gautam-Gambhir-Team-India.jpg',
test_image = image.img_to_array(test_image)
test_image = np.expand_dims(test_image, axis = 0)
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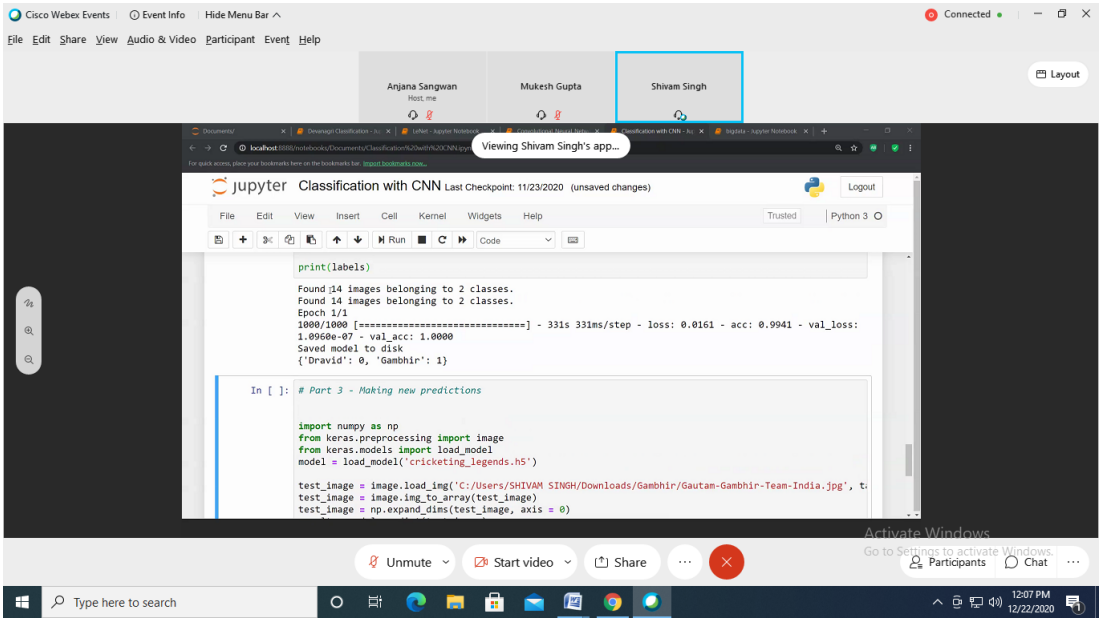
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jupyter Classification with CNN Last Checkpoint: 11/23/2020 (unsaved changes)
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Trusted
Python 3
Run
Code
print(labels)
Found 14 images belonging to 2 classes.
Found 14 images belonging to 2 classes.
Epoch 1/1
1000/1000 [==========] - 331s 331ms/step - loss: 0.0161 - acc: 0.9941 - val_loss: 1.0960e-07 - val_acc: 1.0000
Saved model to disk
{'Dravid': 0, 'Gambhir': 1}
In [ ]:
# Part 3 - Making new predictions
import numpy as np
from keras.preprocessing import image
from keras.models import load_model
model = load_model('cricketing_legends.h5')
test_image = image.load_img('C:/Users/SHIVAM SINGH/Downloads/Gambhir/Gautam-Gambhir-Team-India.jpg',
test_image = image.img_to_array(test_image)
test_image = np.expand_dims(test_image, axis = 0)
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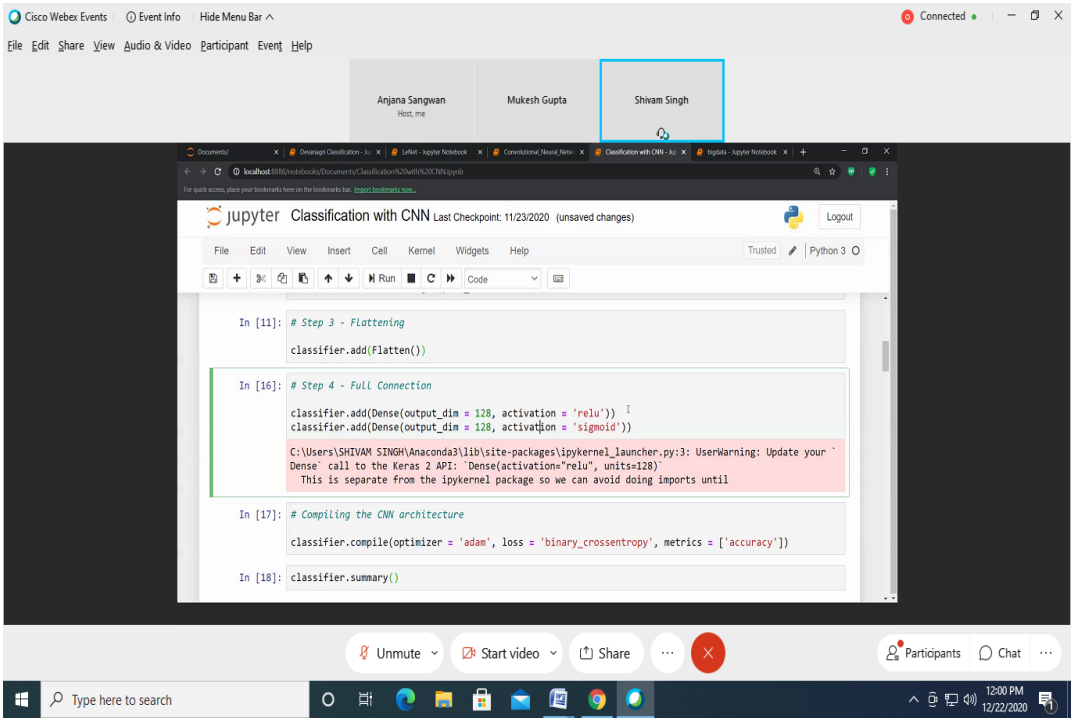
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Python 3
Run
Code
In [11]:
# Step 3 - Flattening
classifier.add(Flatten())
In [16]:
# Step 4 - Full Connection
classifier.add(Dense(output_dim = 128, activation = 'relu'))
classifier.add(Dense(output_dim = 128, activation = 'sigmoid'))
C:\Users\SHIVAM SINGH\Anaconda3\lib\site-packages\ipykernel_launcher.py:3: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activation="relu", units=128)`
This is separate from the ipykernel package so we can avoid doing imports until
In [17]:
# Compiling the CNN architecture
classifier.compile(optimizer = 'adam', loss = 'binary_crossentropy', metrics = ['accuracy'])
In [18]:
classifier.summary()
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फैकल्टी डवलपमेंट प्रोगाम

'डीप लर्निंग फॉर मेडिकल डाटा एनालिसिस' वर्कशॉप आयोजित

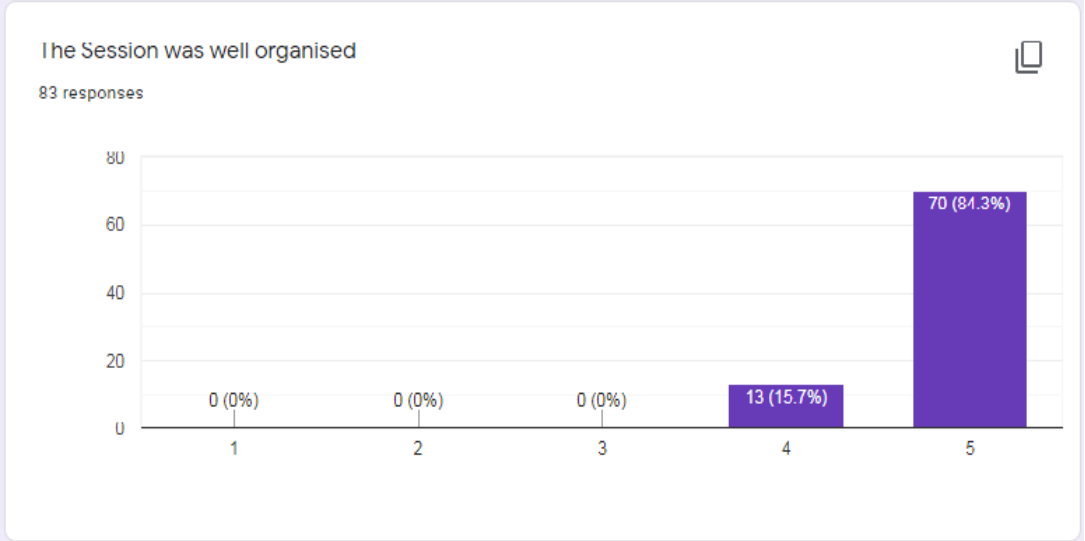
जयपुर| एसकेआईटी में आरटीयू (एटीयू) टीईक्यूआईपी-थर्ड के संयुक्त तत्वावधान में 5 दिवसीय

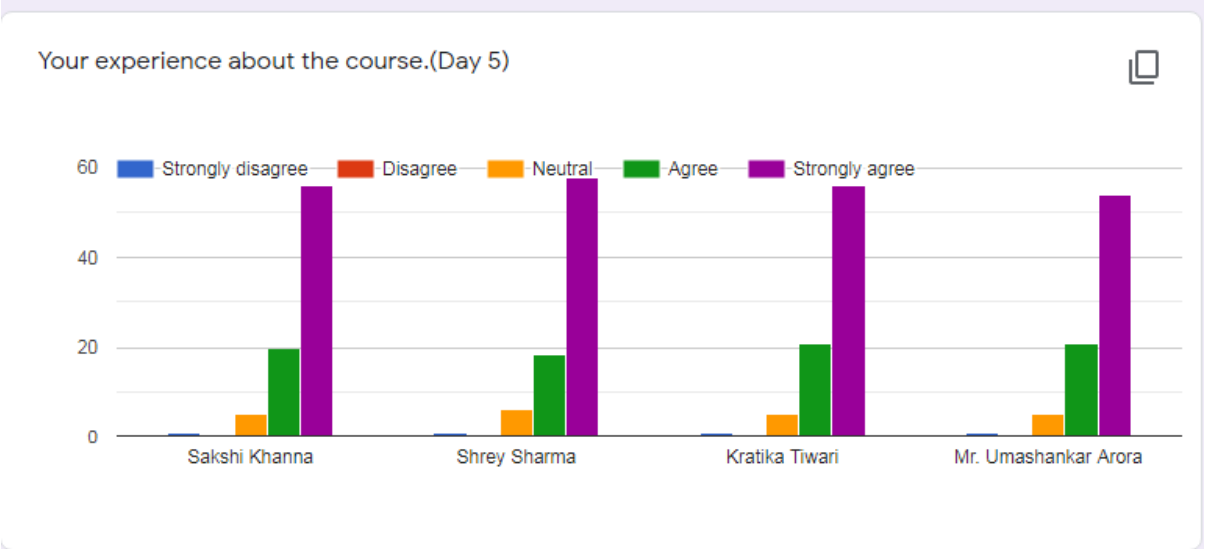
फैक्ल्टी डवलपमेंट प्रोगाम 'डीप लर्निंग फॉर मेडिकल डाटा एनालिसिस' शुक्रवार को संपन्न हुआ। एसकेआईटी के कंप्यूटर साइंस एंड इंजीनिरिंग विभाग एवं इनफॉर्मेशन टेक्नोलॉजी विभाग के फैक्ल्टी सुनील धनखड़, अंजना सांगवान, डॉ. सुनीता गुप्ता, डॉली मित्तल के दिशा निर्देश में यह वर्कशॉप 20 से 24 दिसंबर तक हुई। इसमें देशभर के विभिन्न राज्यों की फैक्ल्टी ने भाग लिया और डीप लर्निंग की स्वाथ्य उपयोगिता व सिद्धांतों पर चर्चा कर कोविड परिवेश में इसका महत्व समझया। एक्सपर्ट्स अभिनव मिश्रा, शिवम सिंह, डॉ. गौरव सिंघल, डॉ. सुनील पाठक, डॉ. प्रमोद गौड़, डॉ. बसंत अग्रवाल, डॉ. योगेश ने विशेष व्याख्यान दिए। समापन समारोह में डॉ. मुकेश गुप्ता, विभाग अधयक्ष (कंप्यूटर साइंस एंड इंजीनिरिंग) ने सभी का धन्यवाद ज्ञापित किया।

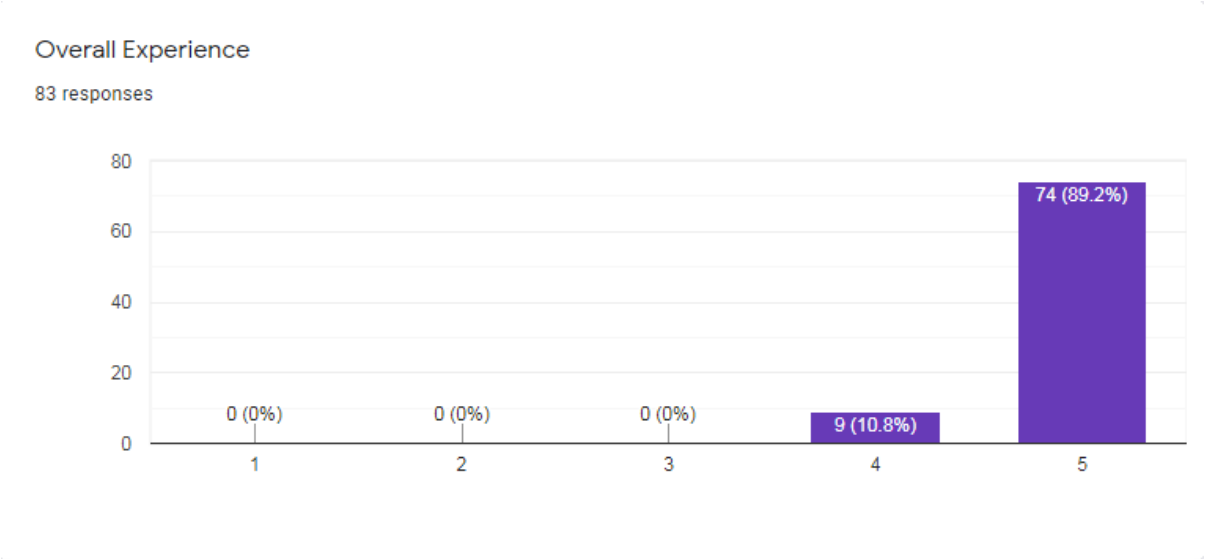
पांच दिवसीय फैकल्टी डेवलपमेंट प्रोग्राम का शुभारंभ

जयपुर, समाचार जगत न्यूज। आधुनिक युग में वर्तमान परिस्थितियों के अनुसार आज आईटी इंडस्ट्री में सेल्सफोर्स टेक्नोलॉजी वर्तमान में विश्व में सबसे तेज़ी से बढ़ती टेक्नोलॉजी में से एक है। सेल्सफोर्स कस्टमर रिलेशनशिप मैनेजमेंट सर्विस में डील करती हे और आज कस्टमर सर्टिफिकेशन के लिए कई रिसर्च काम की आवश्यकता को देखते हुए स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजी, मैनेजमेंट एंड ग्रमोथान के डिपार्टमेंट कंप्यूटर साइंस एंड इंजीनियरिंग एवं इनफॉर्मेशन टेक्नोलॉजी के द्वारा आरटीयू कोटा के सहयोग से टीईक्यूआईपी 3 प्रोजेक्ट के अंतर्गत बुधवार को पांच दिवसीय फैकल्टी डेवलपमेंट प्रोग्राम का शुभारम्भ हुआ। इस कार्यक्रम के अतिथि आरटीयू कोऑर्डिनेटर डॉ. हरीश शर्मा है, जिन्होंने प्रोग्राम का शुभारम्भ किया और सेल्सफोर्स के उपयोगिता के बारे में पार्टिसिपेंट्स को अवगत कराया।

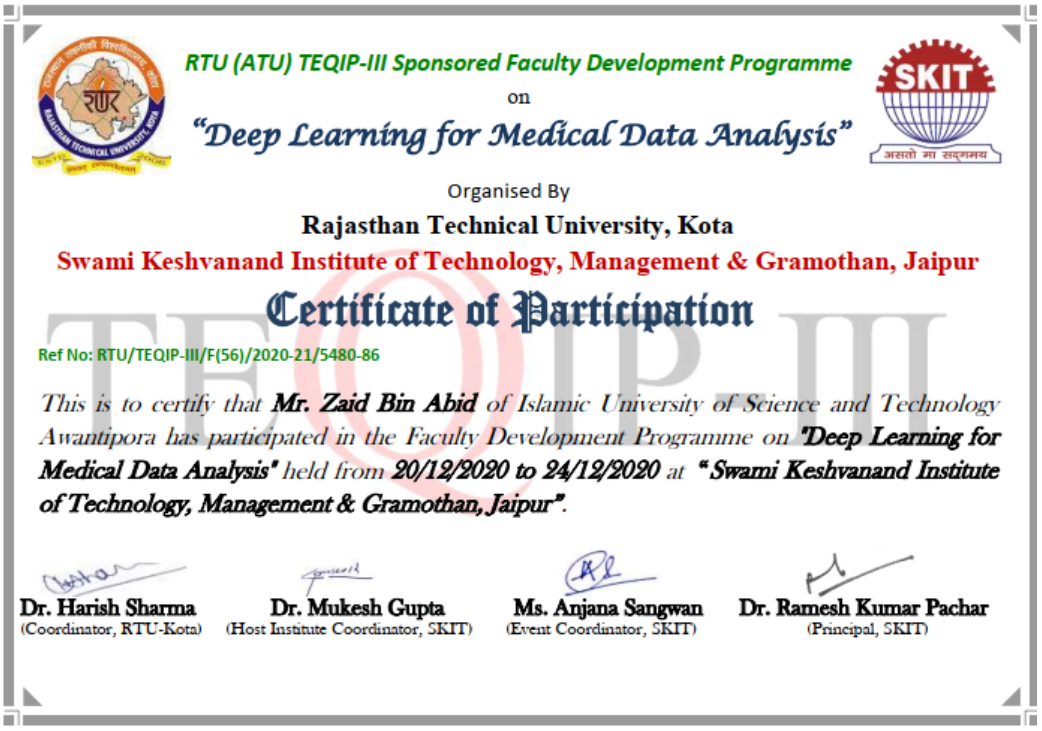
12.FEEDBACK ANALYSIS







13.Sample of Participant Certificate



RTU (ATU) TEQIP-III Sponsored Faculty Development Programme

on

"Deep Learning for Medical Data Analysis"

Organised By

Rajasthan Technical University, Kota

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Certificate of Participation

Ref No: RTU/TEQIP-III/F(56)/2020-21/5480-86

This is to certify that **Mr. Zaid Bin Abid** of Islamic University of Science and Technology Awantipora has participated in the Faculty Development Programme on **"Deep Learning for Medical Data Analysis"** held from **20/12/2020 to 24/12/2020** at **"Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur"**.

Dr. Harish Sharma (Coordinator, RTU-Kota)

Dr. Mukesh Gupta (Host Institute Coordinator, SKIT)

Ms. Anjana Sangwan (Event Coordinator, SKIT)

Dr. Ramesh Kumar Pachar (Principal, SKIT)

14.REPORT OF THE EVENT

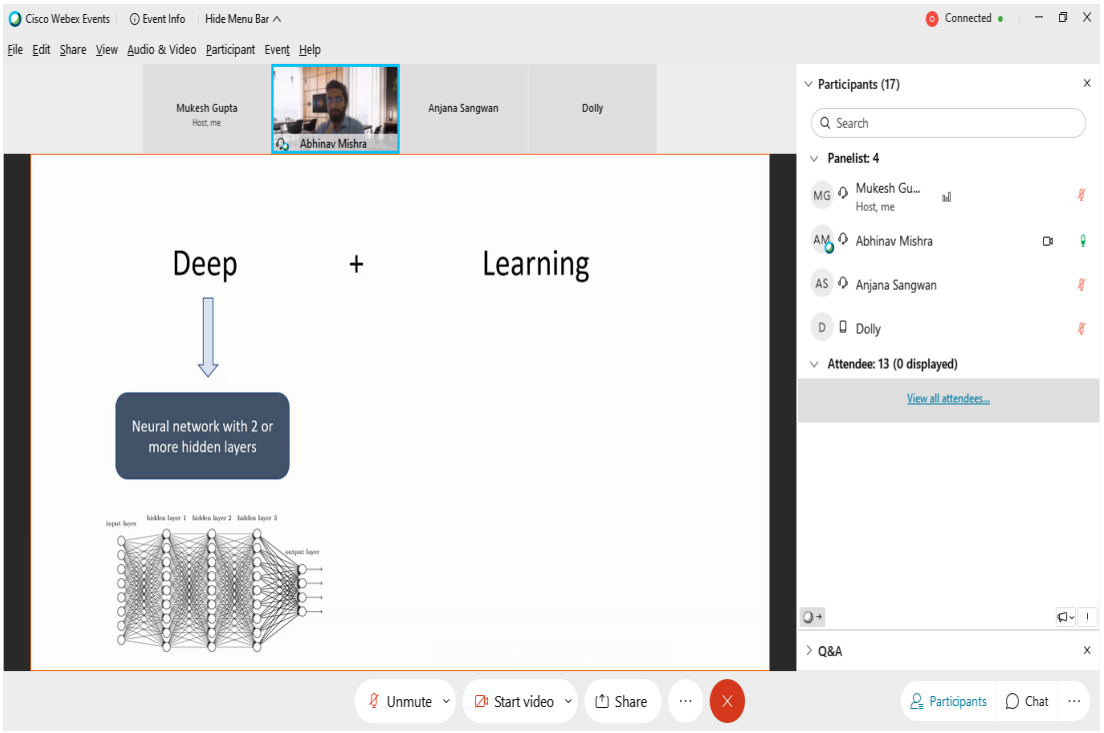
Day 1:

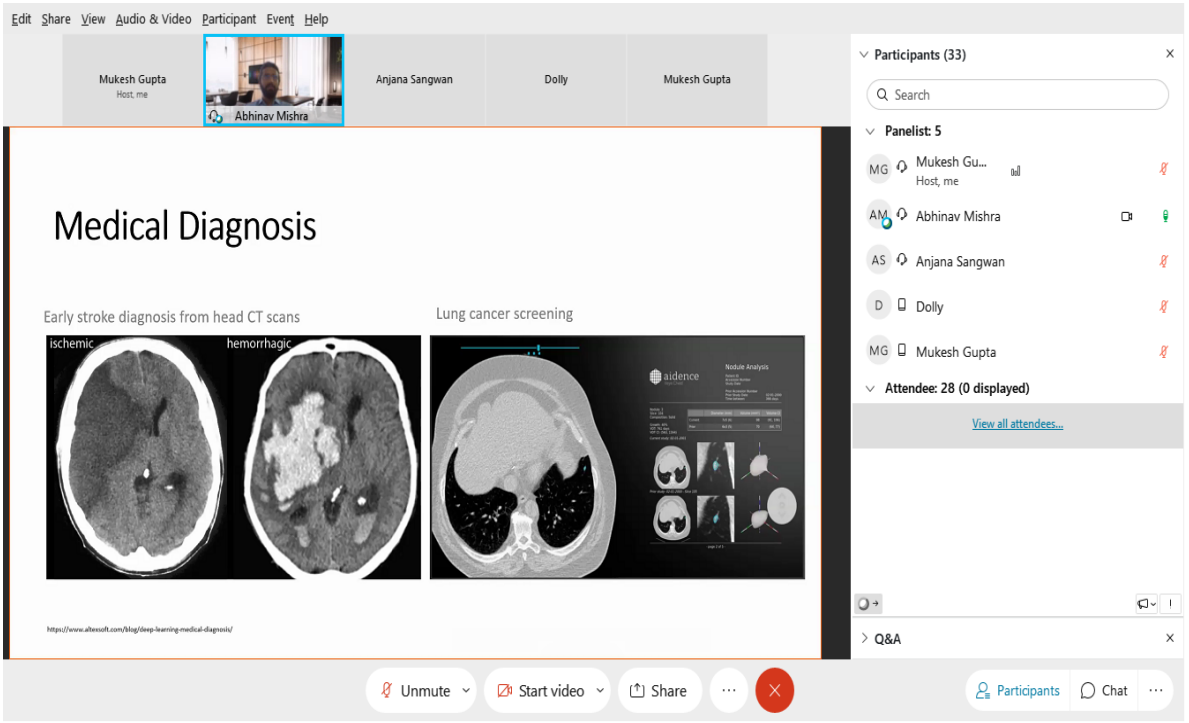
Date: 20 December 2020

Session 1: (10:00-11:15)

1. The first session of the first day was taken by **Mr. Abhinav Mishra, Data Scientist, Smiths Detection System, Private Limited Bangalore.**
2. The topic for this session was "Introduction to Deep Learning and its applications".
3. He started the session with the introduction of Deep Learning and role of Deep Learning and Machine Learning.
4. He then discussed why Deep Learning is used and introduce about Perceptron (Building block of Deep Learning).
5. He discussed three constraints or problem in Deep Learning like Big Data, Hardware and Software and also discussed about history of Deep Learning.
6. He explained some common types of Neural Network like Multilayer Perceptron, Convolutional Neural Network, Recurrent Neural Network etc.

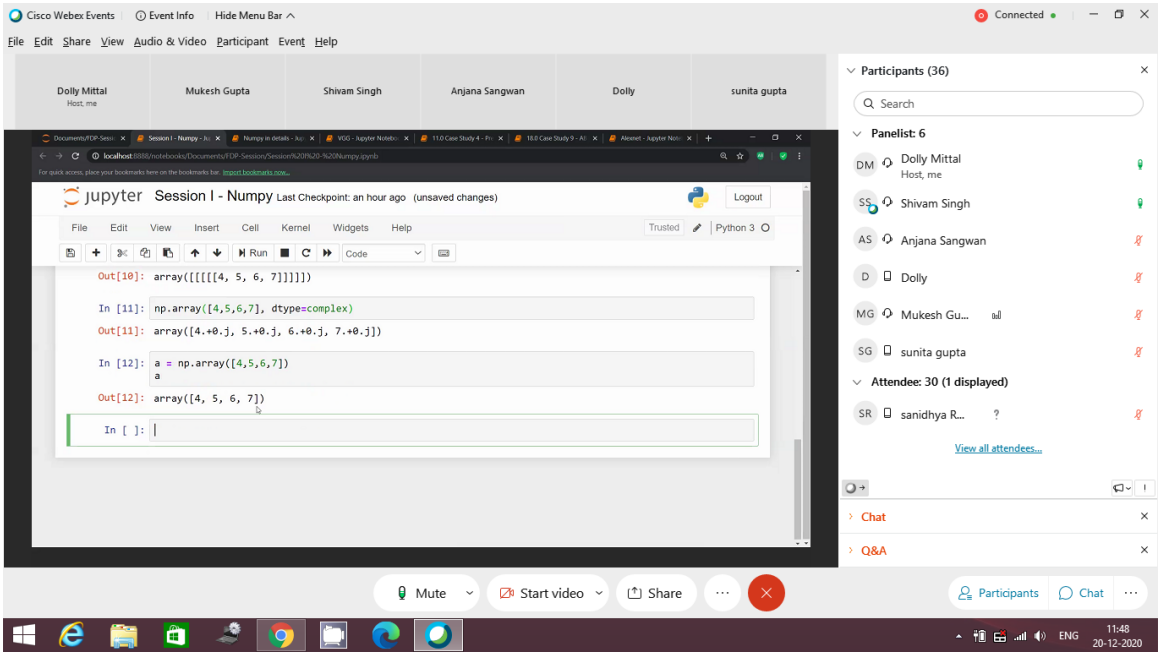
7. At last he discussed applications of Deep Learning, common Misconceptions and Myths about Deep Learning.
8. At the end a very healthy question answer session also took place related to the topics covered in the session and research areas on these topics.

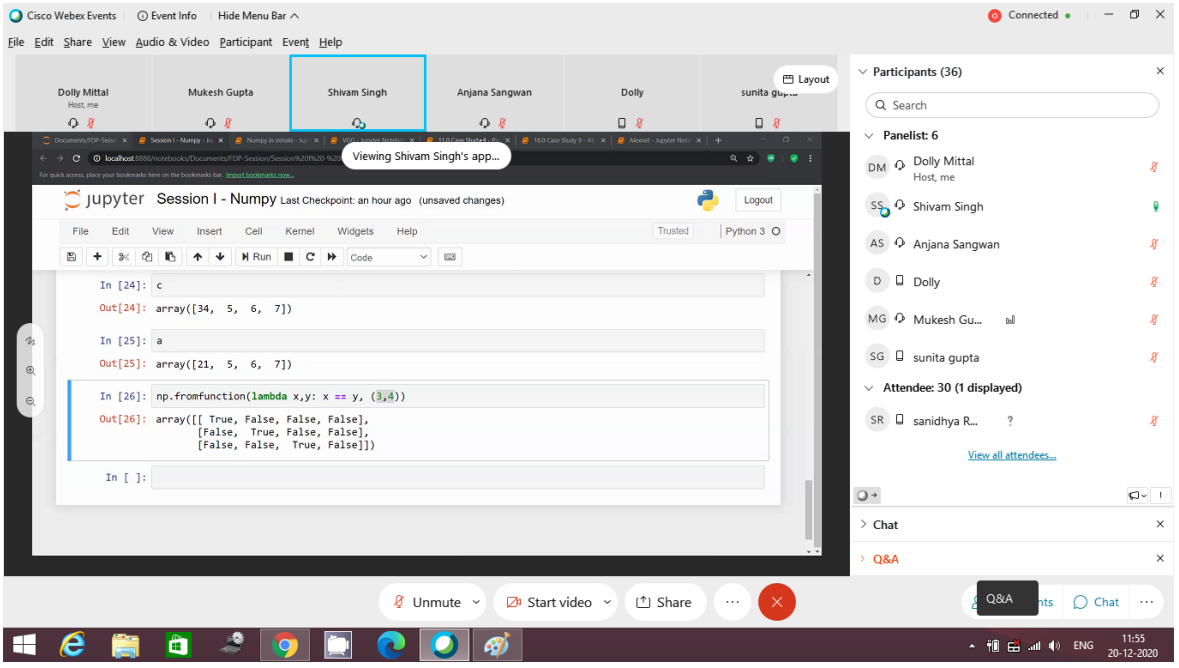




Session 2: (11:15-12:30)

1. The second session of the day was taken by **Mr. Shivam singh, Data Scientist, DVS Web Infotech.**
2. The topic for this session was "Numerical Computation with Numpy in Python Programming" and session started with the introduction of this library.
3. He discussed various methods for creating an array of different dimensions.
4. He then discussed range(), linespace() and logspace() functions for arrays.
5. He discussed random number generation and reshaping of arrays.
6. He discussed subset calculation for arrays .
7. He showed, how to perform various mathematical operations over arrays.

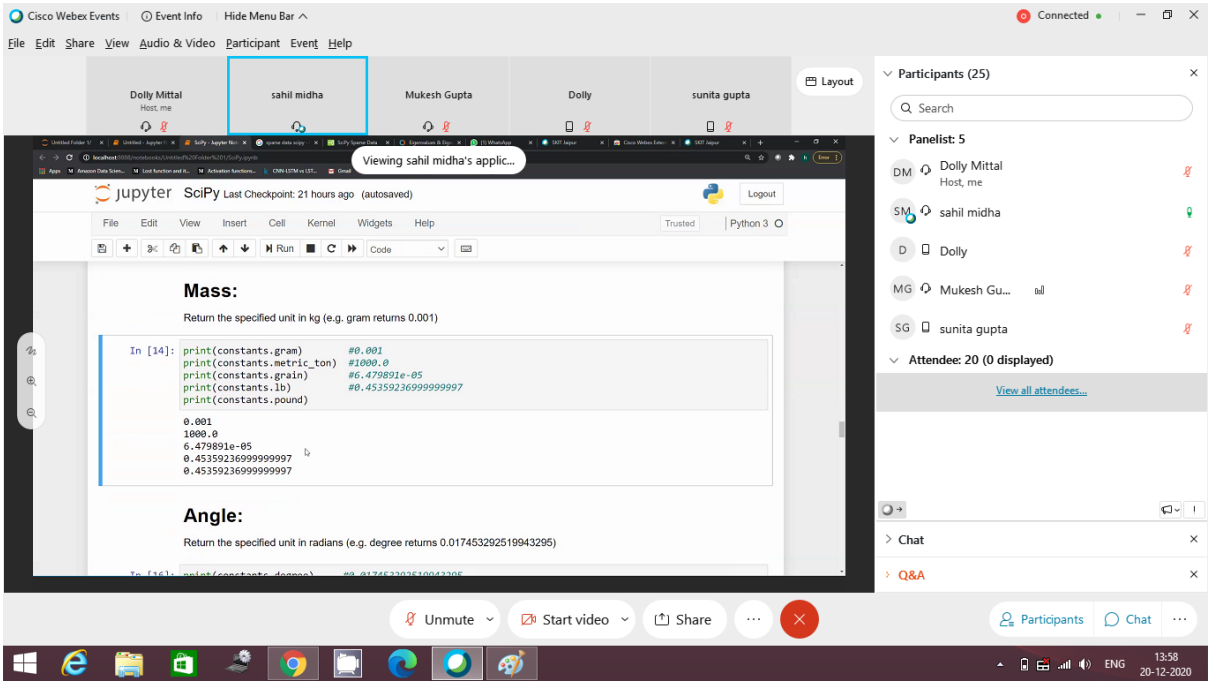


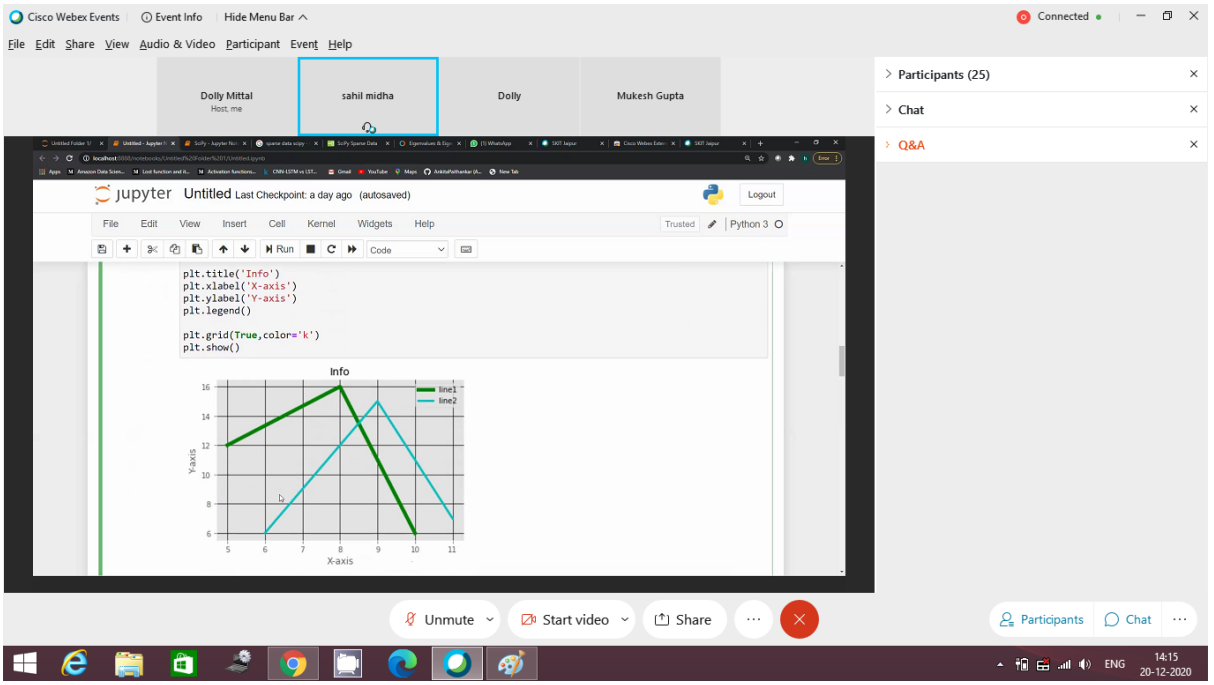


Session 3: (1:30-2:45)

1. The third and final session of the day was taken by **Mr. Sahil Middha, Data Scientist, DVS Web Infotech.**
2. The topic for this session was “Scientific Computation with Scipy, Data Visualization with Matplotlib" and session started with the introduction of these libraries.
3. He discussed various scientific constants for different categories like time, mass etc. available in scipy library.
4. He then discussed how to deal with sparse data while performing computations.

5. He showed, how to perform different scientific operations using built in function in scipy.
6. He discussed matplotlib library for visualization purpose, how to represent the statistics using a xy graph.
7. He shared methods to draw bar graph, pie chart, scattered graph etc.



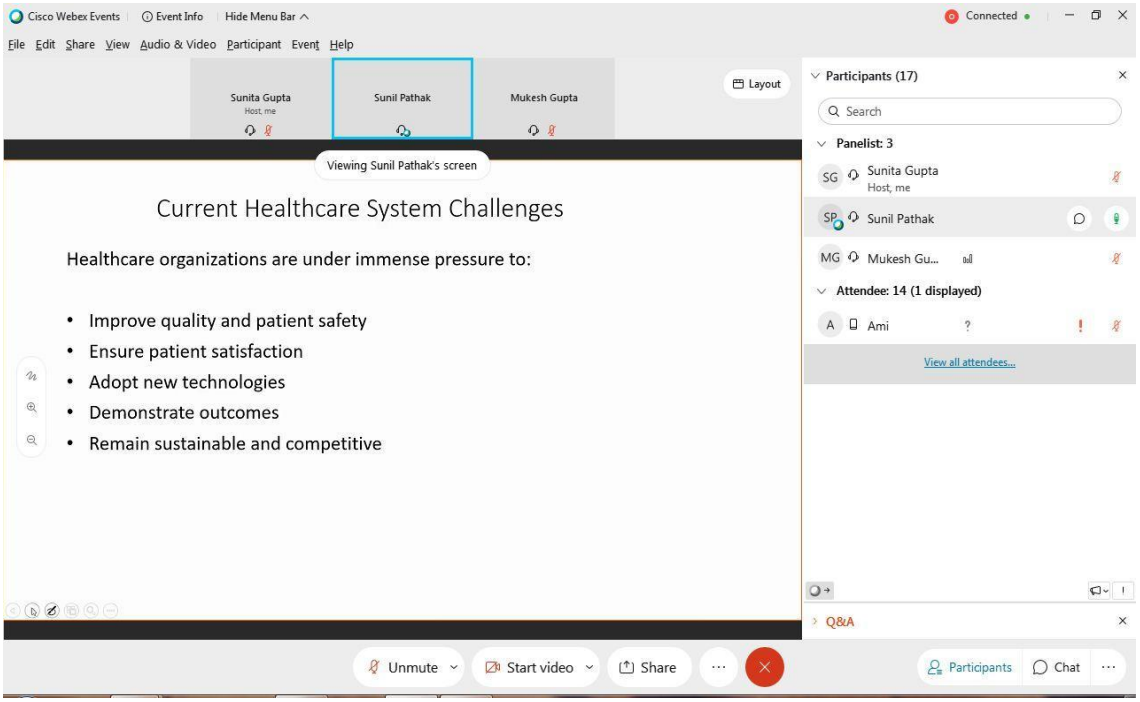


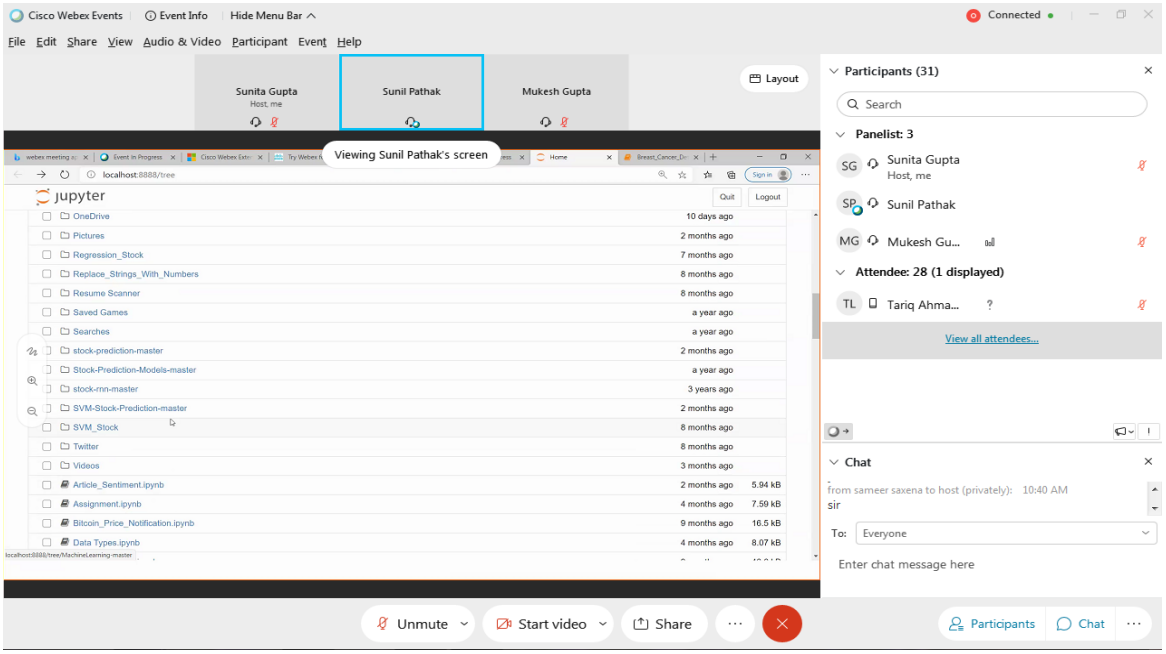
Day 2:

Date: 21 December 2020

Session 1: (10:00-11:15)

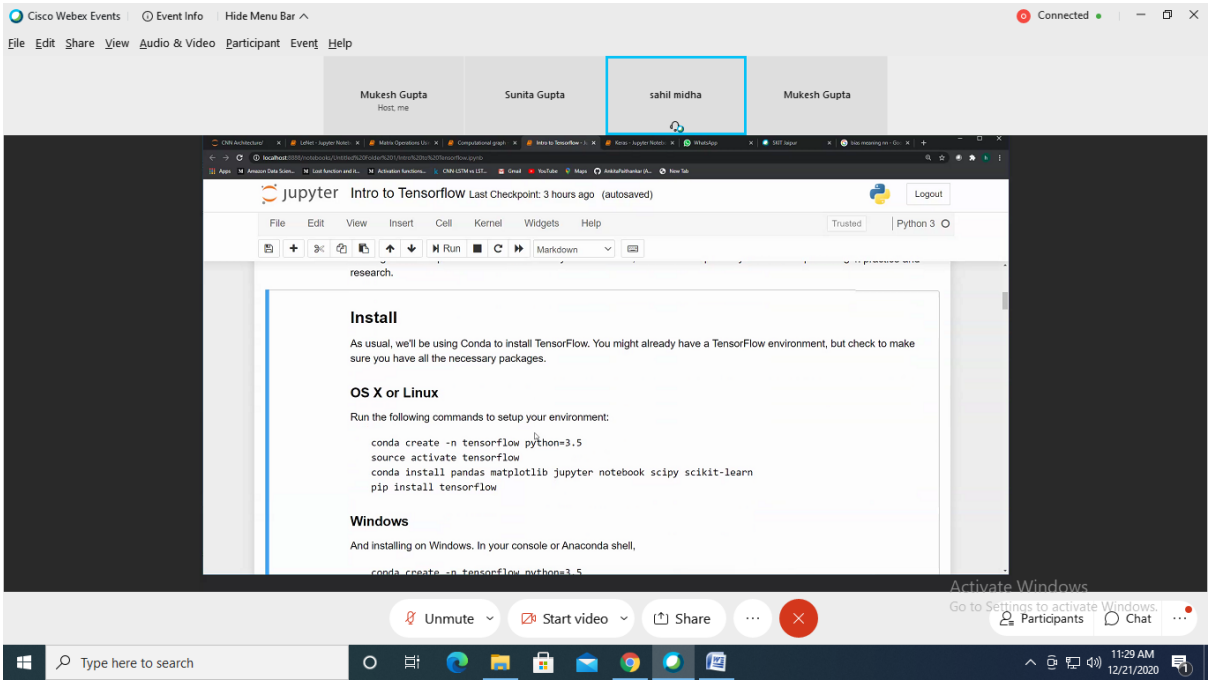
1. The first session of the first day was taken by **Dr. Sunil Pathak, Associate Professor, Amity University, Jaipur, Rajasthan.**
2. The topic for this session was “Research Issues in Medical Data Analysis" and session started with the introduction of data analytics.
3. He discussed various Challenges and research issues in Medical Data Analysis .
4. He discussed Gartner’s four types of analytics with example.
5. He discussed different sources of data and how deep learning is used in medical data analysis.
6. He then discussed Data, Information, Knowledge and Wisdom hierarchy.
7. He showed how to work with Jupiter Notebook Interface and explained using breast cancer detection example.
8. At the end a very healthy question answer session also took place related to the topics covered in the session and research areas on these topics.





Session 2: (11:15 am -12:30pm)

1. The II session of the day was taken by **Mr. Sahil Middha, Data Scientist, DVS Web Infotech.**
2. The topic for this session was "Basics of Tensorflow and Keras, Building Computational Graphs and Matrix computations using " and session started with the introduction of these libraries.
3. He explain about tensorflow and its installation and its function with a hands-on session.
4. He then discussed how to deal with sparse data while performing computations.
5. He showed, how to perform different scientific operations using built in function in scipy.
6. He shared methods to draw bar graph, pie chart, scattered graph etc.
7. At the end a very healthy question answer session also took place. Different questions were asked by the participants related to the topic and how to use it etc.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Sunita Gupta
sahil midha
Mukesh Gupta
jupyter Intro to Tensorflow Last Checkpoint: 3 hours ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Markdown
research.
Install
As usual, we'll be using Conda to install TensorFlow. You might already have a TensorFlow environment, but check to make sure you have all the necessary packages.
OS X or Linux
Run the following commands to setup your environment:
conda create -n tensorflow python=3.5
source activate tensorflow
conda install pandas matplotlib jupyter notebook scipy scikit-learn
pip install tensorflow
Windows
And installing on Windows. In your console or Anaconda shell,
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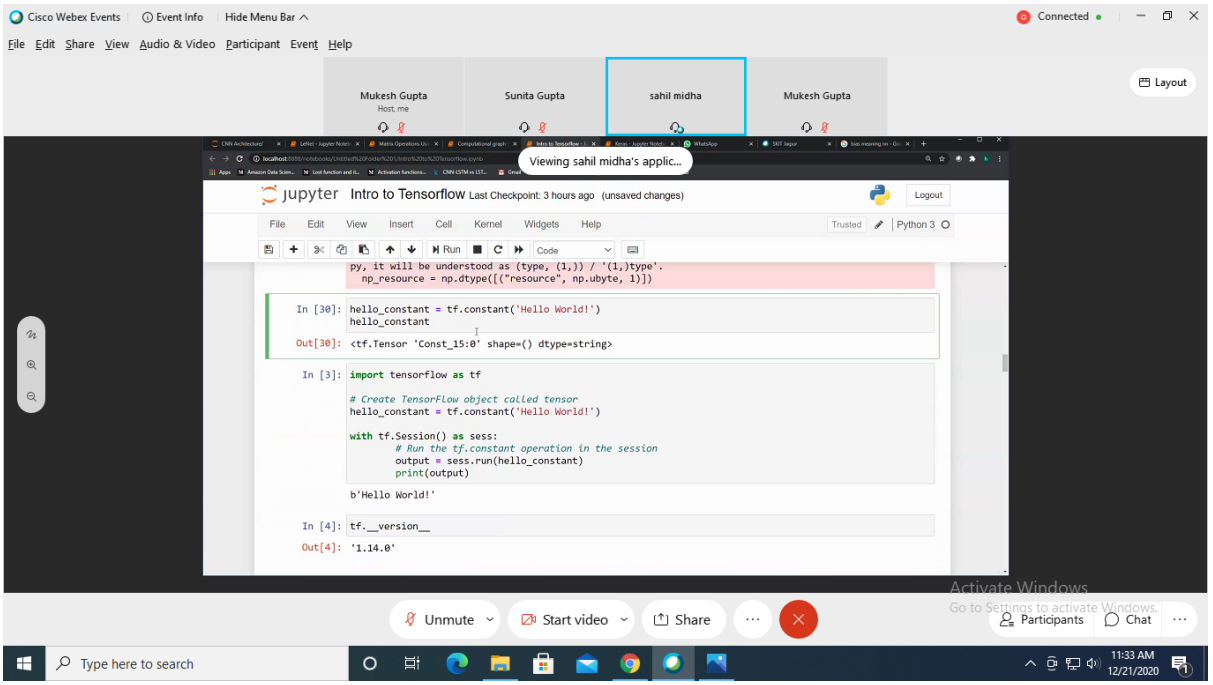
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Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Code
In [30]:
hello_constant = tf.constant('Hello World!')
hello_constant
Out[30]:
<tf.Tensor 'Const_15:0' shape=() dtype=string>
In [3]:
import tensorflow as tf
# Create TensorFlow object called tensor
hello_constant = tf.constant('Hello World!')
with tf.Session() as sess:
# Run the tf.constant operation in the session
output = sess.run(hello_constant)
print(output)
b'Hello World!'
In [4]:
tf.__version__
Out[4]:
'1.14.0'
Unmute
Start video
Share
Participants
Chat
Activate Windows
Go to Settings to activate Windows.
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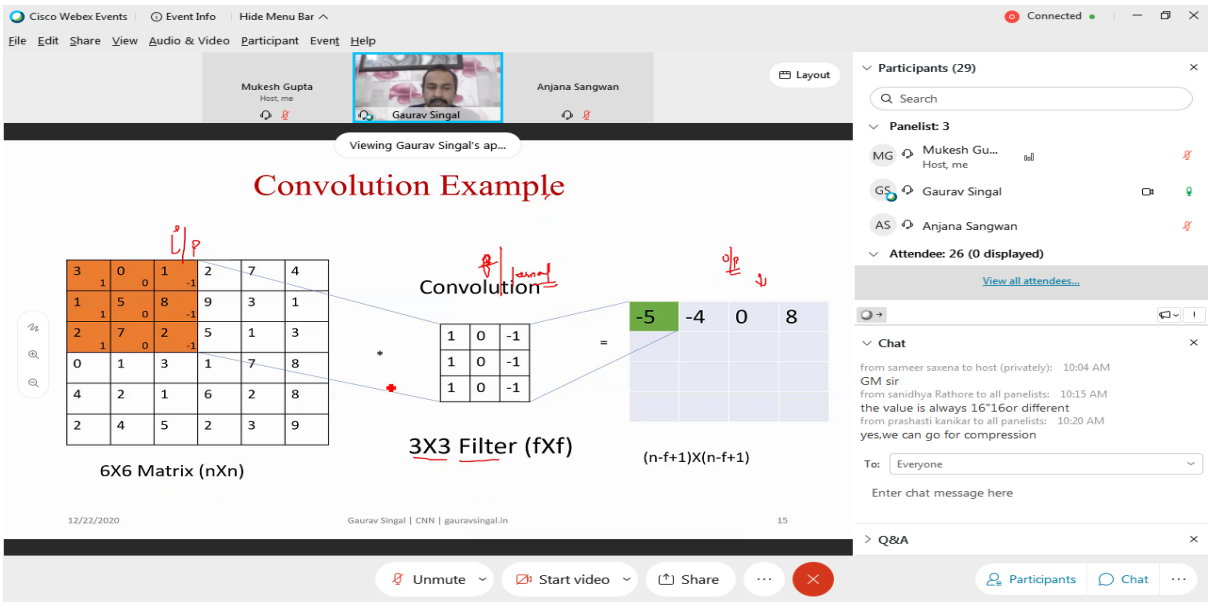
12/21/2020

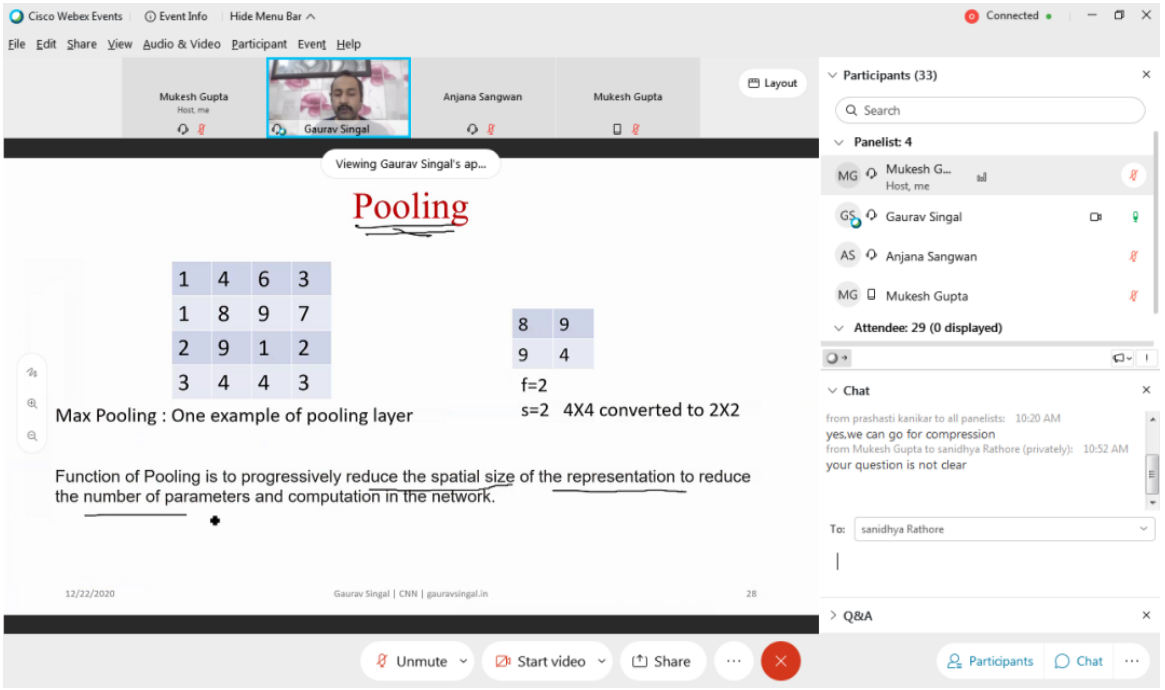
Day 3:

Date: 22 December 2020

Session 1: (10:00-11:15 AM)

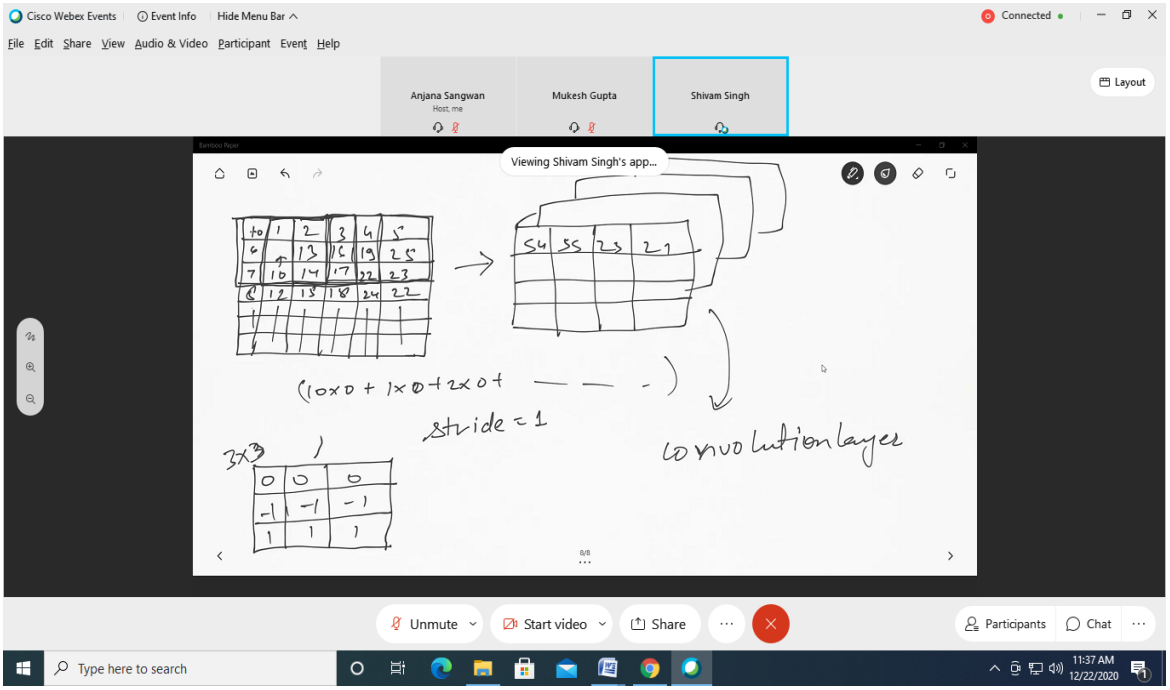
1. First session was taken by **Dr. Gaurav Singhal**, **Assitant Professor, Bennett University, Greater Noida, UP.**
2. The session was about "**Convolutional Neural Network (CNN)".** He started the session with Introduction of Convolutional Neural Network and applications of it like Image Quality Enhancement, Gesture Recognition, Object Detection, Style Transferring, Face Recognition etc.
3. He Explained the difference between CNN and AN and motivation for CNN.
4. He discussed how to train the network and then do the testing. He also discussed the purpose of Convolution in Convolutional Neural Network and how it is used to extract the features from input image.
5. He also discussed some famous CNN Models.
6. He discussed that padding is used to preserve the original dimension of the input and pooling is used to reduce the size of the image.
7. At the end a very healthy question answer session also took place related to the topics covered in the session and research areas on these topics.

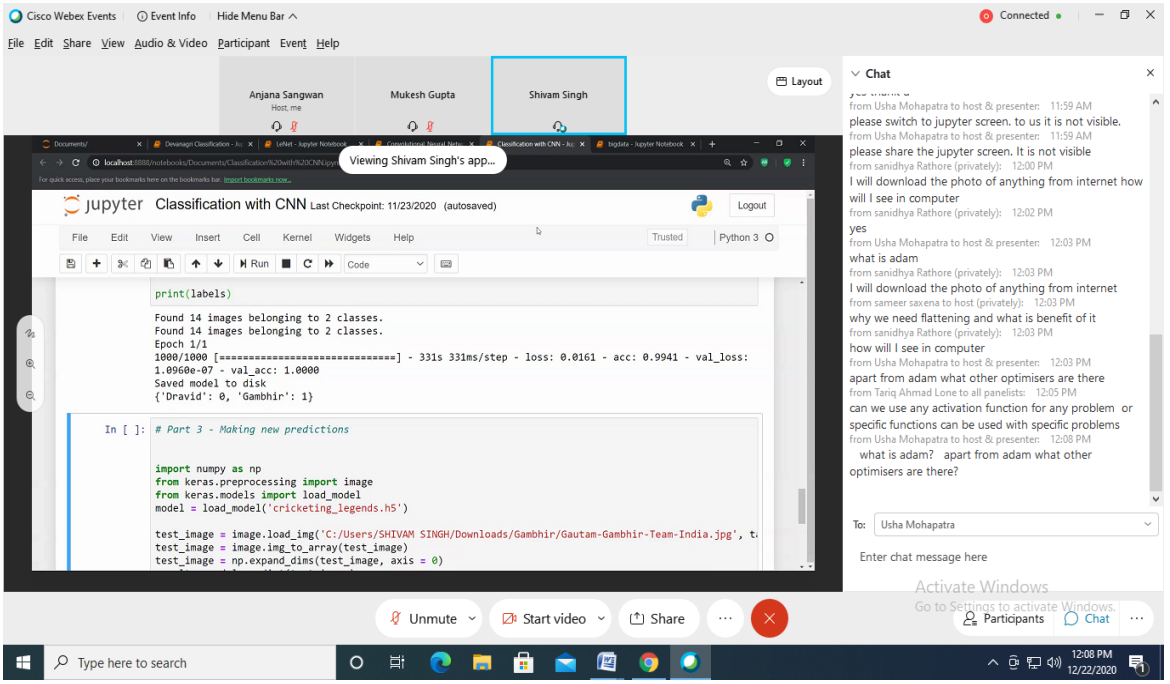




Session 2: (11:15 am -12:30pm)

1. The II session of the day was taken by **Mr. Shivam Singh,Data Science Trainer Dvs Web Infortech Pvt.Ltd.**
2. The topic for this session was "**Understanding CNN Architecture using Tensorflow and keras**
3. Basics of Tensorflow and Keras, and session started with the introduction of these.
4. He explains about tensorflow and its function with a hands-on session.
5. He then discussed some real time application and how to use/implement them.
6. He showed how to perform different classification with CNN.
7. He explain different CNN architecture.
8. At the end a very healthy question answer session also took place. Different questions were asked by the participants related to the topic and how to use it etc.





Session 3: (1:30-2:45)

1. The third and final session of the day was taken by **Mr. Sahil Middha, Data Scientist, DVS Web Infotech.**

FDP **Deep Learning for Medical Data Analysis**

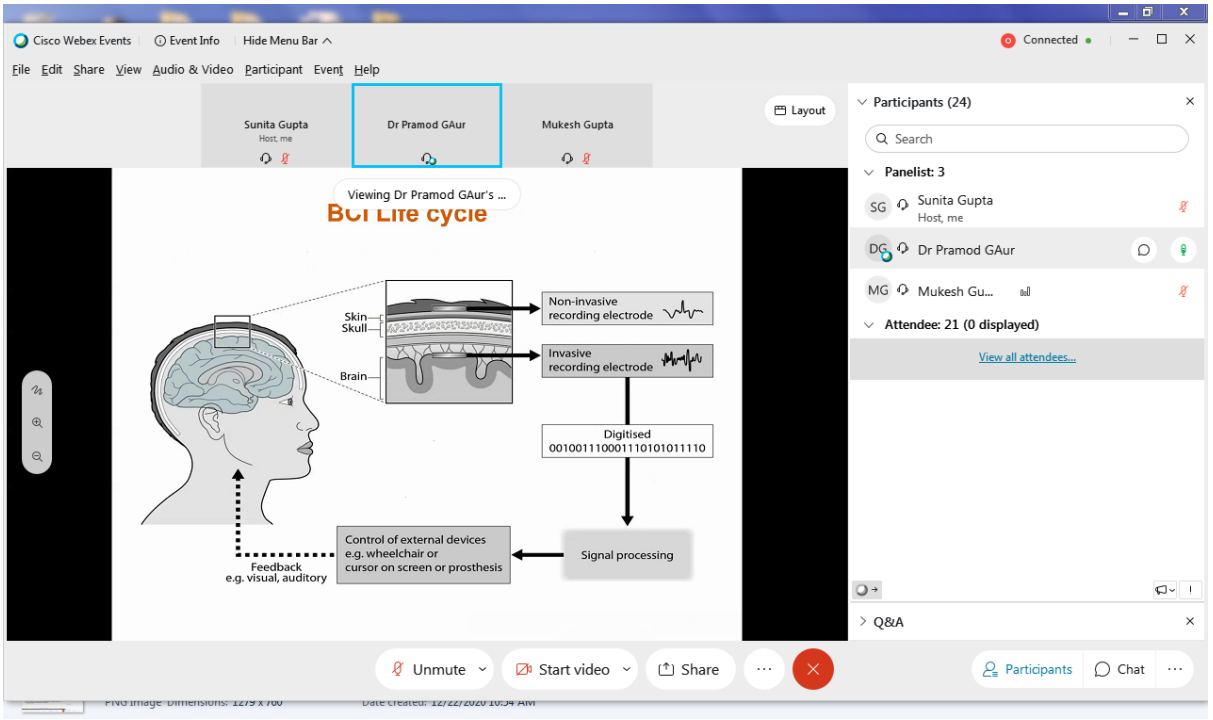
8. The topic for this session was “Implementation of Single-Layer perceptron Network and Multi-Layer perceptron Networks with Tensorflow and Keras" and session started with the introduction of neuron.
9. He discussed about Tensorflow and Keras.
10. He then discussed how to implement the Single-Layer perceptron with Tensorflow and Keras.
11. After he gave the depth knowledge about Multi-Layer perceptron Networks with all mathematical calculations
12. Finally, he implemented Multi-Layer perceptron Networks with Tensorflow and Keras.

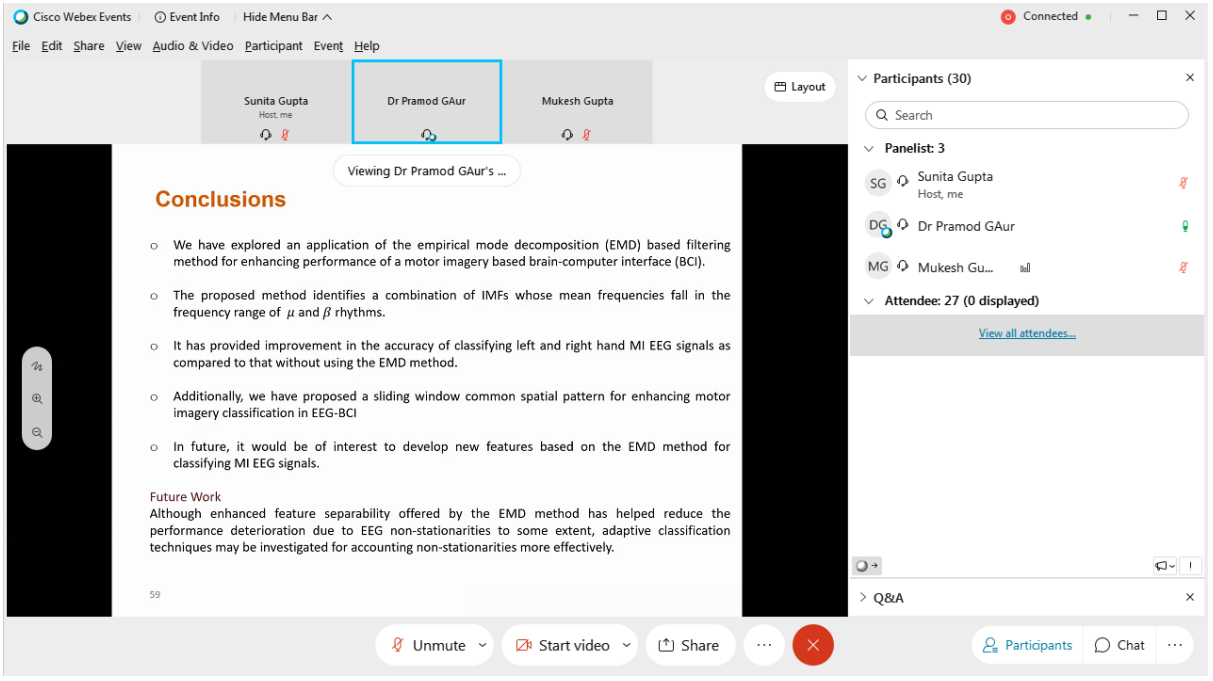
Day 4:

Date: 23 December 2020

Session 1: (10:00-11:15)

1. The first session was taken by **Dr. Pramod Gaur, Assistant Professor, BITS Pilani Dubai, Dubai UAE.**
2. The topic for this session was “Brain Computer Interface and its Application" and session started with the introduction of Brain Computer Interface (BCI). BCI is also called Direct Neural Interface (DNI).
3. He explained the principal behind BCI, different parts of our brain, Neuroanatomy of our brain and then an example of BCI.
4. He then discussed Challenges in BCI and how to handle them.
5. He explained brain signals that derive BCI systems and research areas in BCI.
6. He discussed Empirical Mode of Decomposition (EMD), which is used to determine characteristic Time/Frequency scales for the energy.
7. He discussed EMD algorithm. He shows and explains the video of BCI operated exoskeleton.
8. At the end a very healthy question answer session also took place related to the topics covered in the session and research areas on these topics.

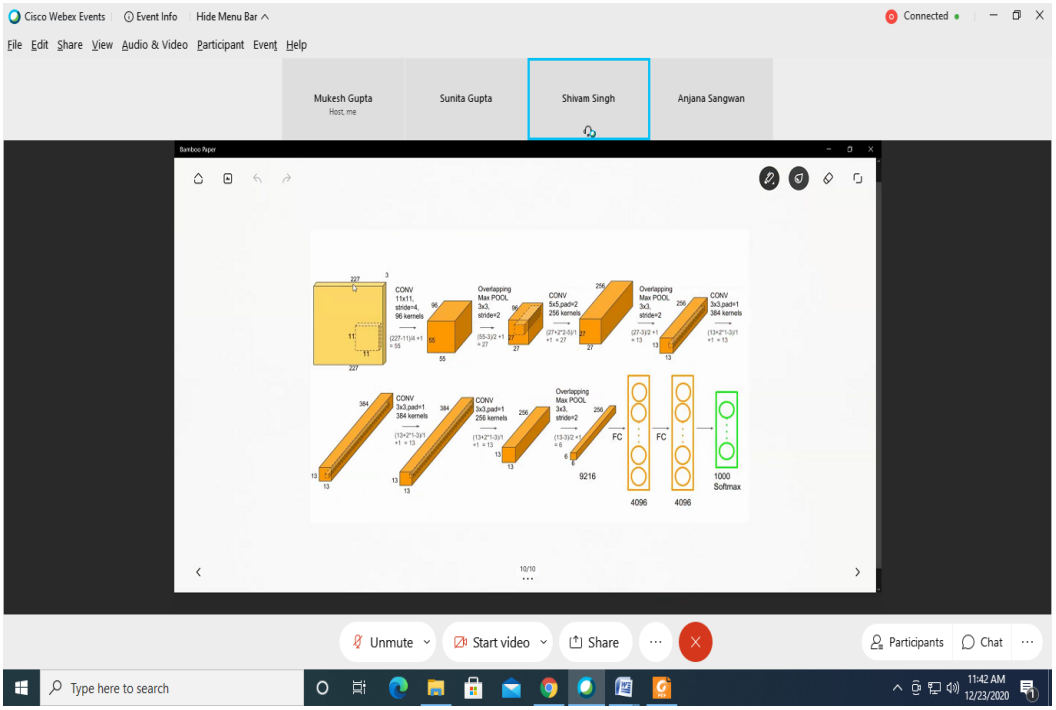




Session 2: (11:15 am -12:30pm)

1. The II session of the day was taken by **Mr. Shivam Singh,Data Science Trainer Dvs Web Infortech Pvt.Ltd.**

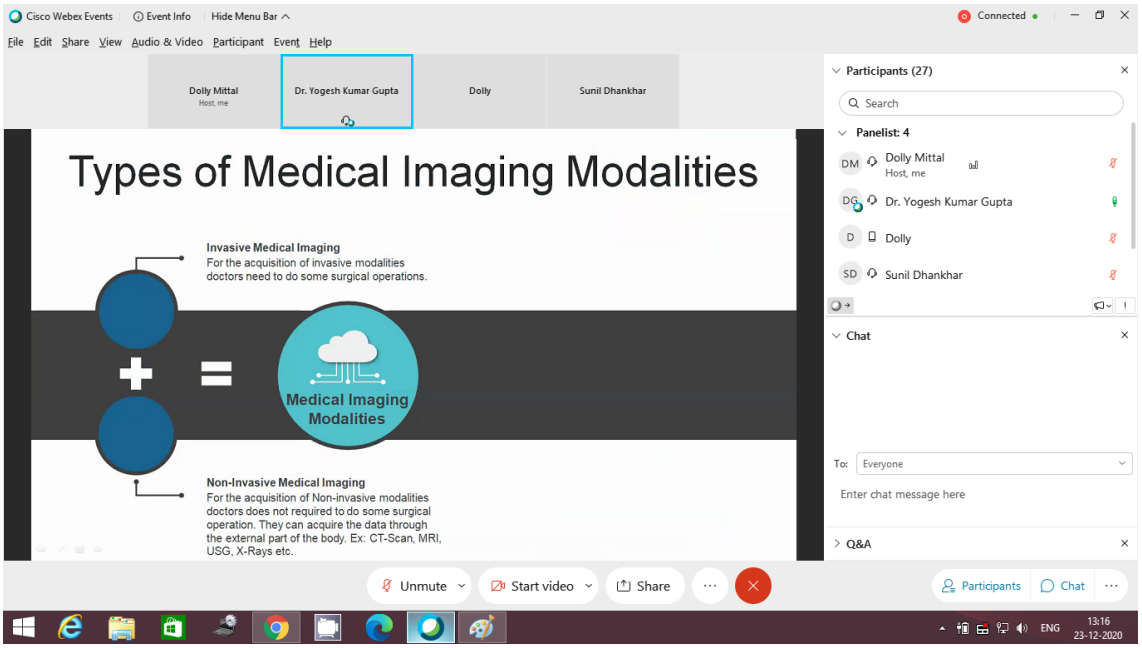
2. The topic for this session was "**Transfer Learning using VGGNet, Resnet and Inception Net"**
3. He explains about Alex Net, history, architecture and its function with a examples.
4. He then discussed some **VGGNet** in detail with real time application and how to use/implement them.
5. He showed some basic questions about VGGNet and their solutions.
6. He showed a reaches paper and explain deep learning concept with the help of that.
7. He discussed about deep residual networks
8. At the end a very healthy question answer session also took place. Different questions were asked by the participants .

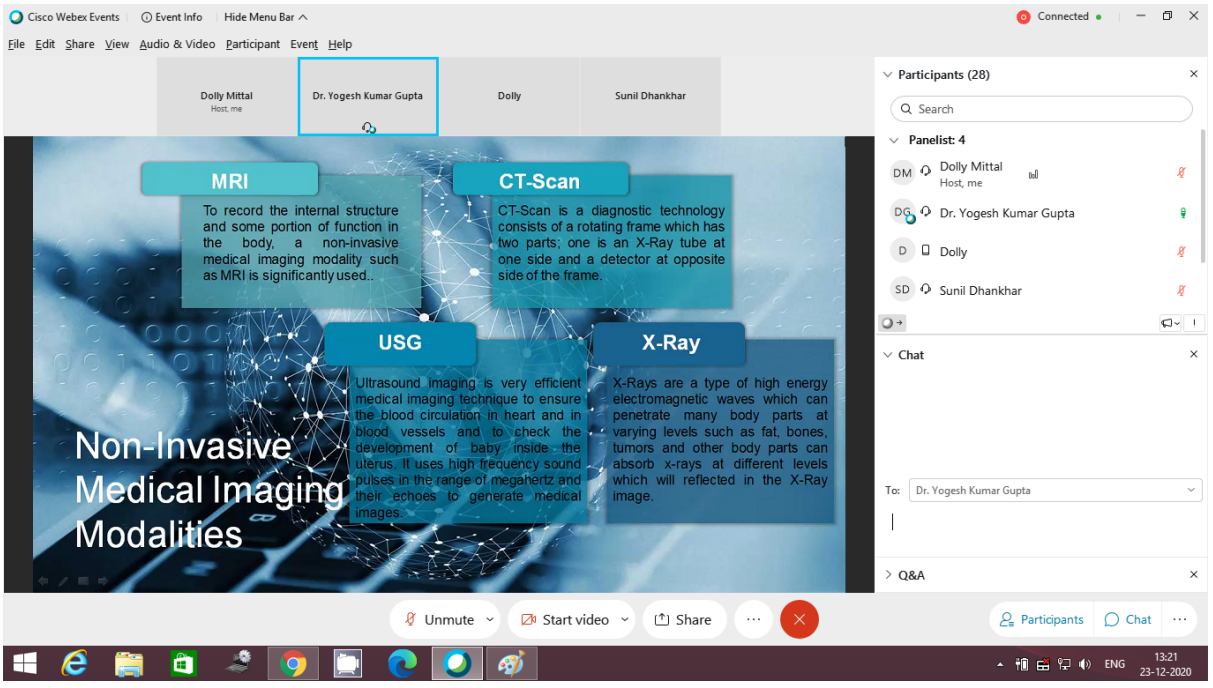


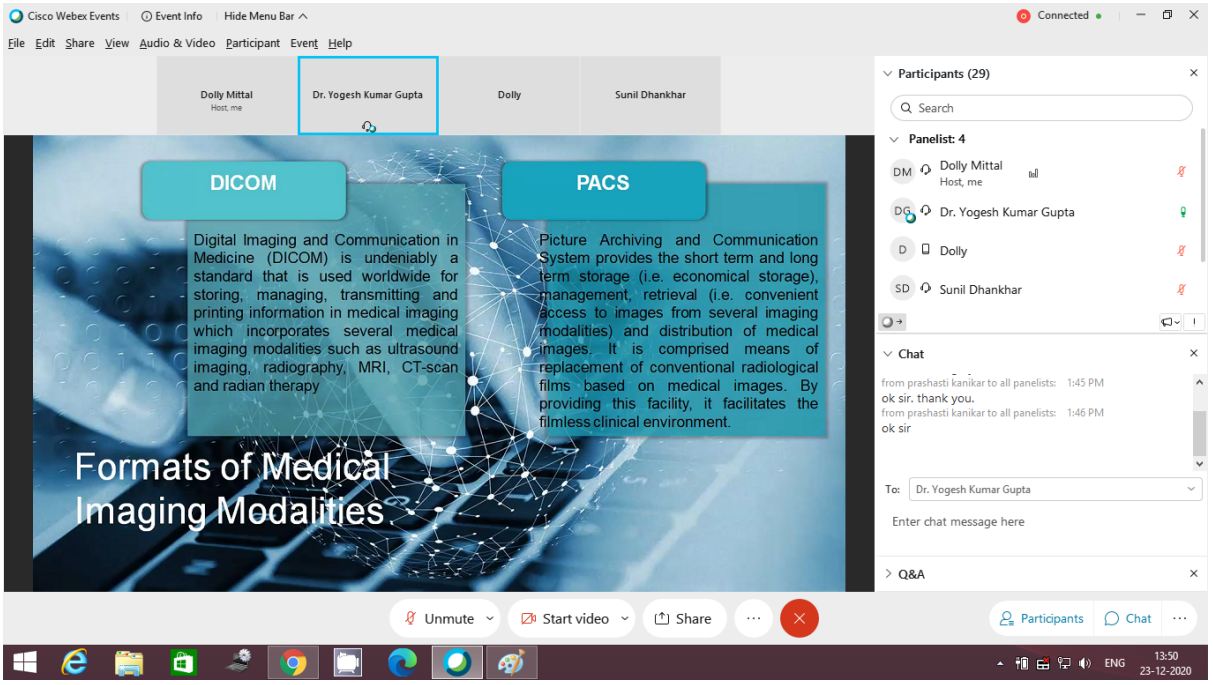
Session 3: (1:00-2:00 PM)

1. The third and final session of the day was taken by **Dr. Yogesh Gupta, Assistant Professor, Banasthali Vidyapith.**
2. The topic for this session was "Medical Imaging Modalities" and session started with the introduction of the data sources for medical Imaging.
3. He discussed two types of data sources, primary and secondary data sources.
4. He then discussed types of medical imaging modalities, which are invasive and non-invasive.
5. He showed how to use MRI, CT-Scan, USG and X-Ray for non-invasive imaging modality.

6. He then discussed two formats of medical imaging modalities, which are DICOM and PACS. DICOM is digital imaging and communication in medicine and PACS is picture archiving and communication system. These are the standards for storing, managing, transmitting and printing information in medical imaging.





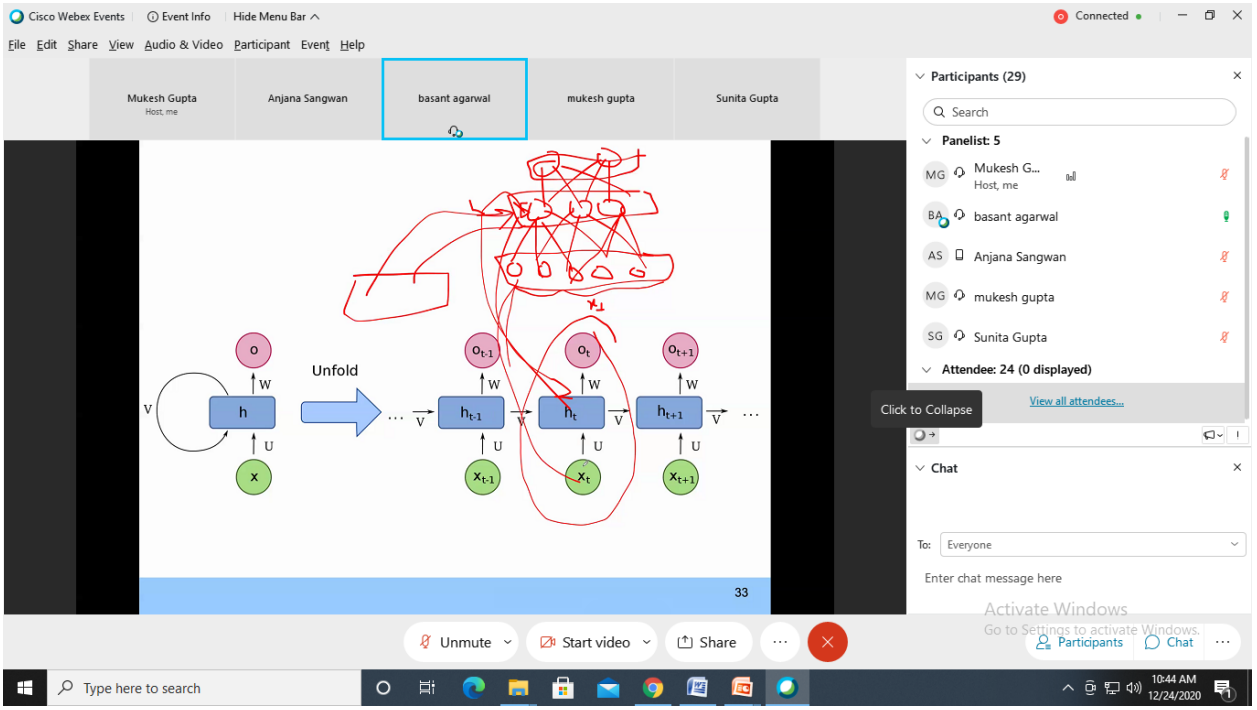


Day 5:

Date: 24 December 2020

Session 1: (10:00-11:15)

1. The first session was taken by **Dr Basant Agarwal, Assistant Professor, IIIT, Kota** .
2. The topic for this session was "**Recurrent Neural Networks**"
3. He start with the basic idea of Sigmoid neuron , Gradient descent Learning with gradient descent, Multilayer Neural Network etc.
4. He explained the principal of **Recurrent neural networks (RNN)-LSTM.**
5. He explain RNN in detail with its properties and Process Sequences
6. He also discussed about different functions of RNN and Computational Graph.
7. He take examples like Character-level Language Model Sampling and explain in a very good manner.He also explains **Architecture for an RNN**. Also discussed Problems in RNN
8. He then discussed LSTM (Long Short Term Memory) The Problem of Long-Term Dependencies .He discussed Architecture for an LSTM and **Implementing an LSTM**
9. At the end a very healthy question answer session also took place related to the topics covered in the session and research areas on these topics.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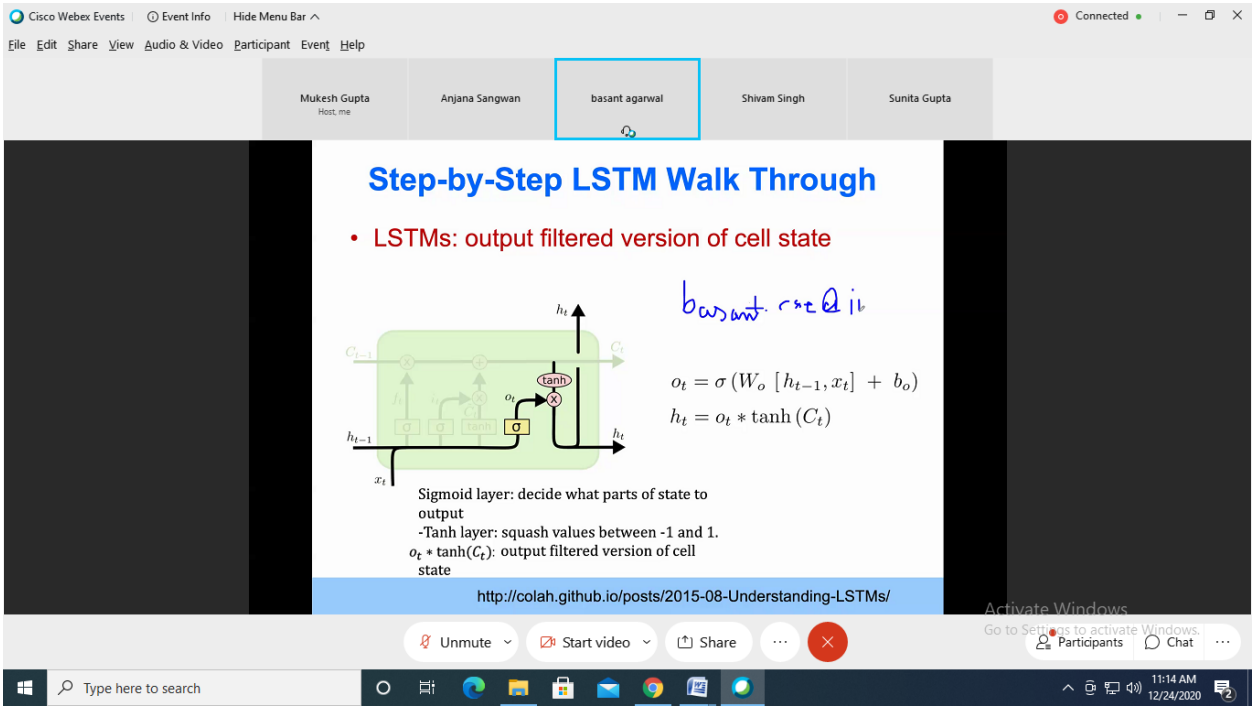
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Step-by-Step LSTM Walk Through
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$h_t = o_t * \tanh(C_t)$
Sigmoid layer: decide what parts of state to output
-Tanh layer: squash values between -1 and 1.
$o_t * \tanh(C_t)$: output filtered version of cell state
http://colah.github.io/posts/2015-08-Understanding-LSTMs/
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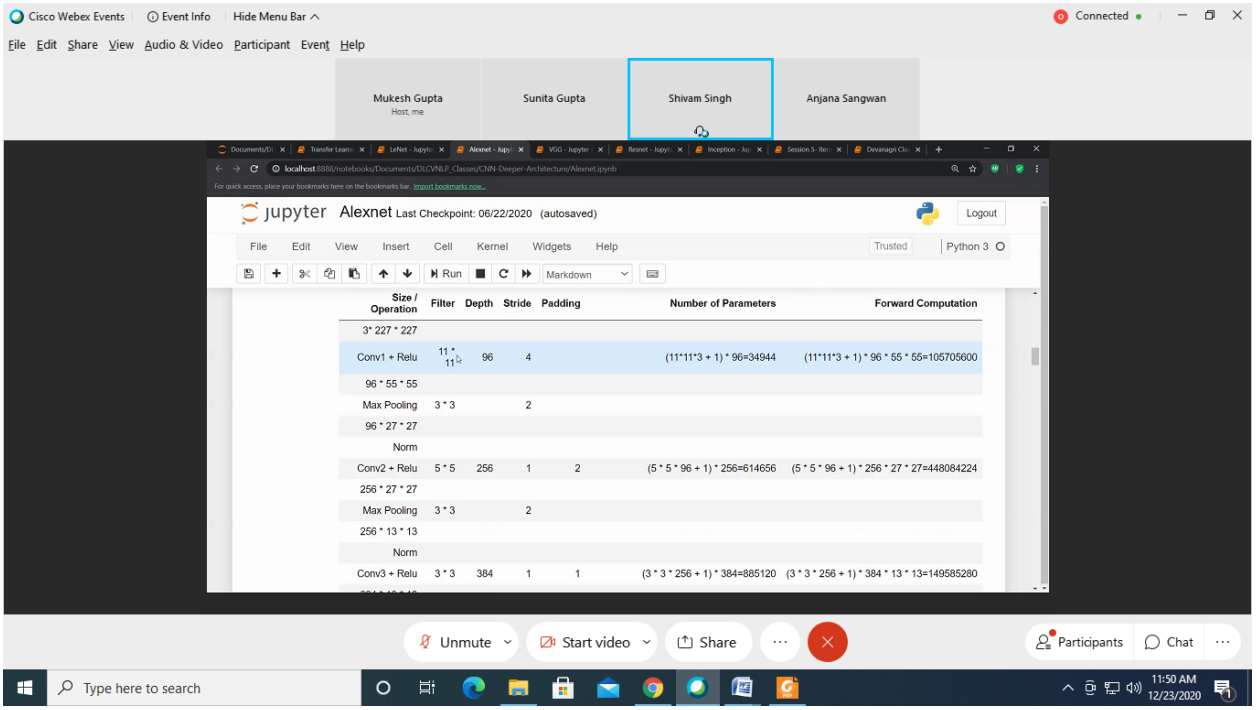
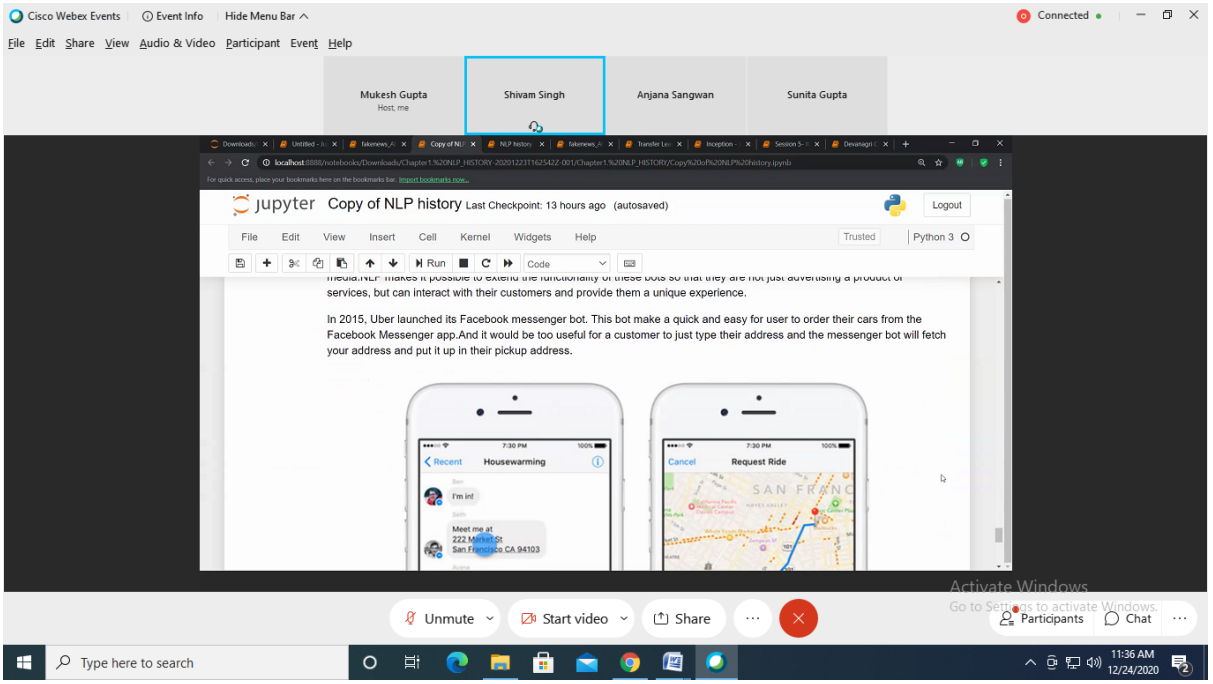
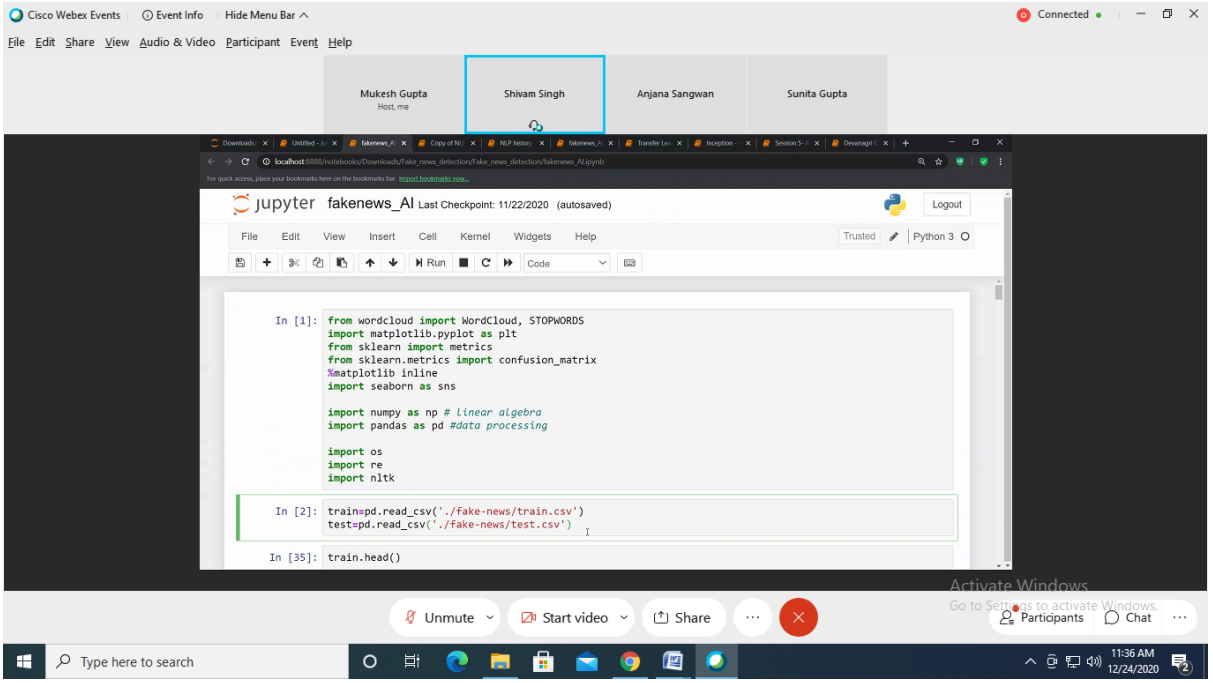


Session 2: (11:15-12:30 PM)

1. The third and final session of the day was taken by **Mr. Shivam Singh, Data Scientist.**
2. The topic for this session was "**Natural Language Processing".**
3. He start with brief history of NLP and why NLP? He give some example of spell correction, search engine etc.
4. He also discussed about The Natural Language Toolkit (NLTK).
5. He took a hands on session to explain different functions of NLP.
6. At the end a very healthy question answer session also took place. Different questions were asked by the participants .

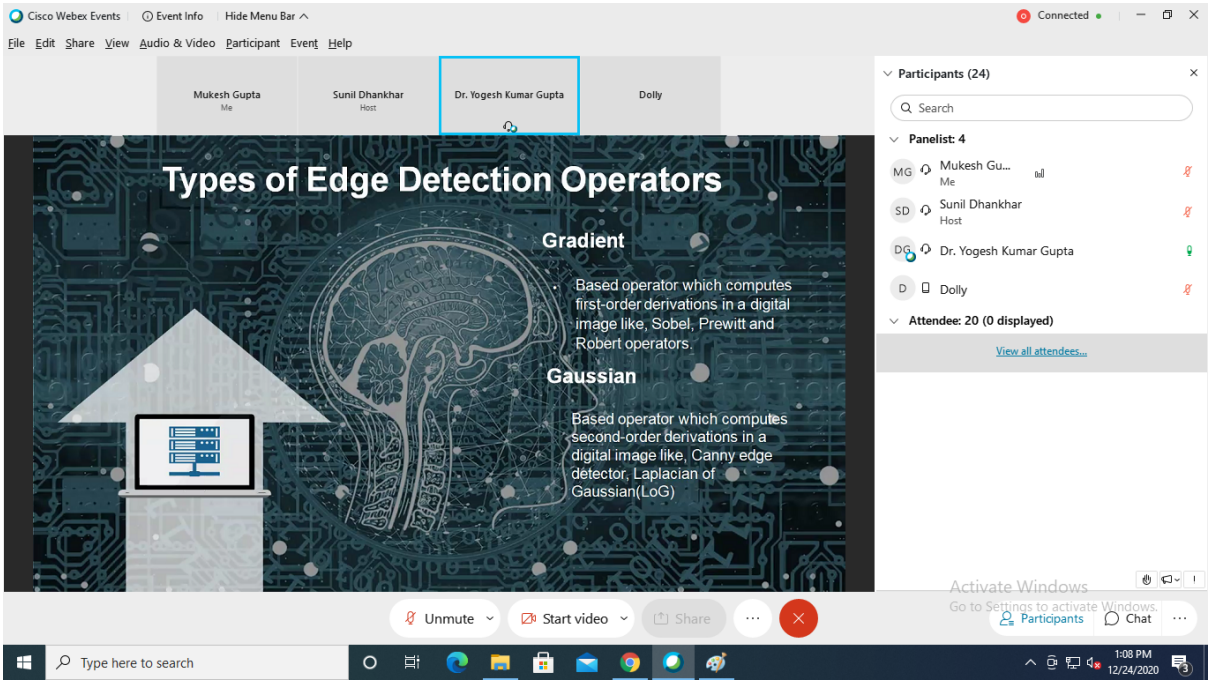


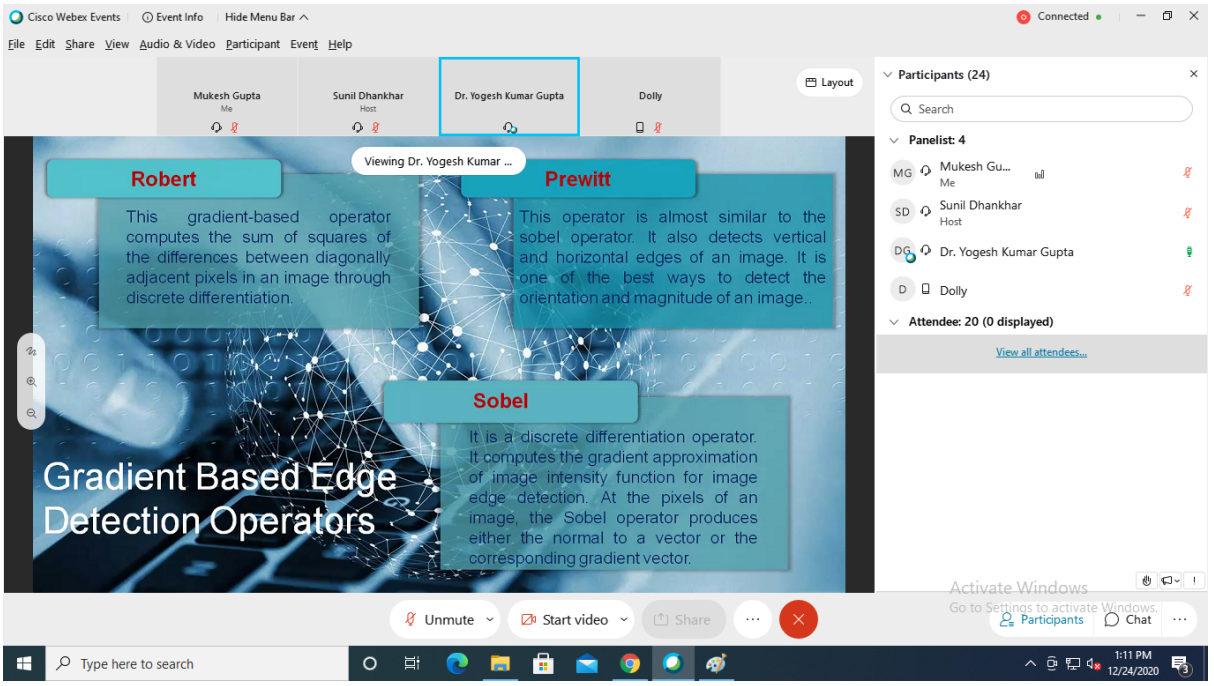


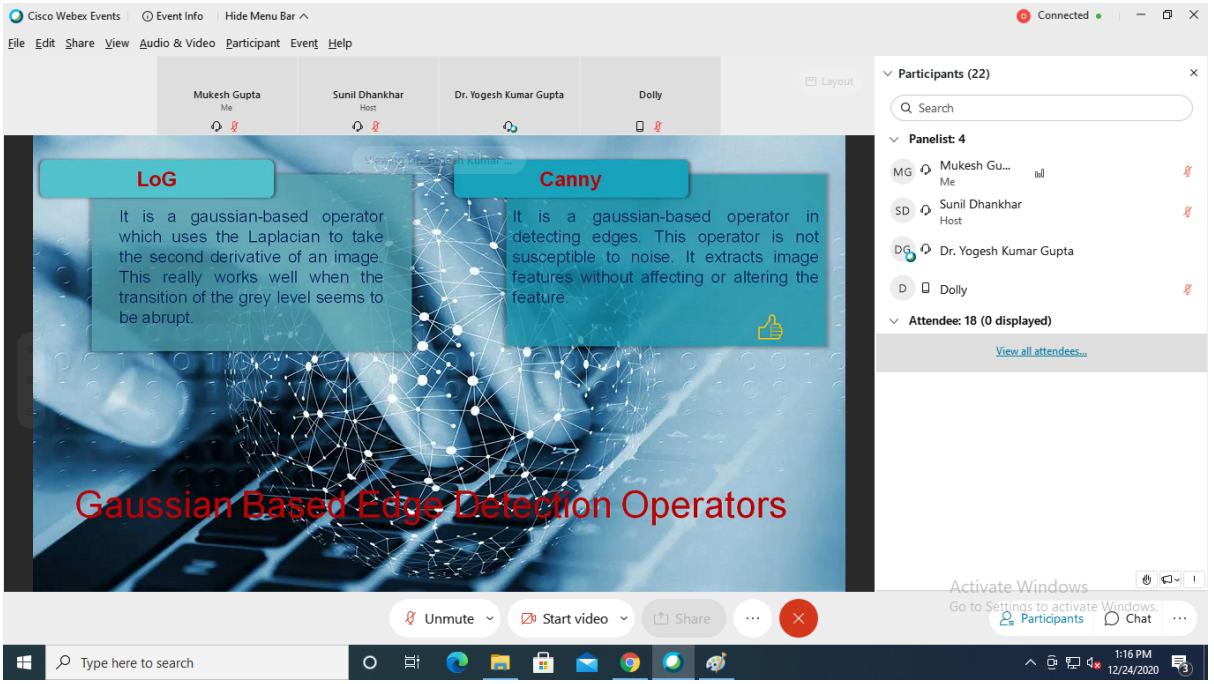
Session 3: (1:00-2:00 PM)

1. The third and final session of the day was taken by **Dr. Yogesh Gupta, Assistant Professor, Banasthali Vidyapith.**
2. The topic for this session was "Edge Detection Methods for Finding Object Boundaries in Medical Images" and session started with the introduction edge detection in images.

3. He discussed two types of edge detection method, Gradient and Gaussian. For Gradient method, he explained three types of operators for edge detection, Robert, Prewitt and Sobel. Of all the three operator, sobel is the best one for edge detection.
4. He then discussed two types of Gaussian methods, Log and Canny. Canny is the best edge detection operator amongst all the gradient and Gaussian operators.
5. He then showed the practical implementation of all the edge detection operators for CT-Scan and MRI images.
6. Next, he discussed various real time applications like face recognition, finger print identification, traffic control analysis etc of edge detection.



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Canny
It is a gaussian-based operator in detecting edges. This operator is not susceptible to noise. It extracts image features without affecting or altering the feature.
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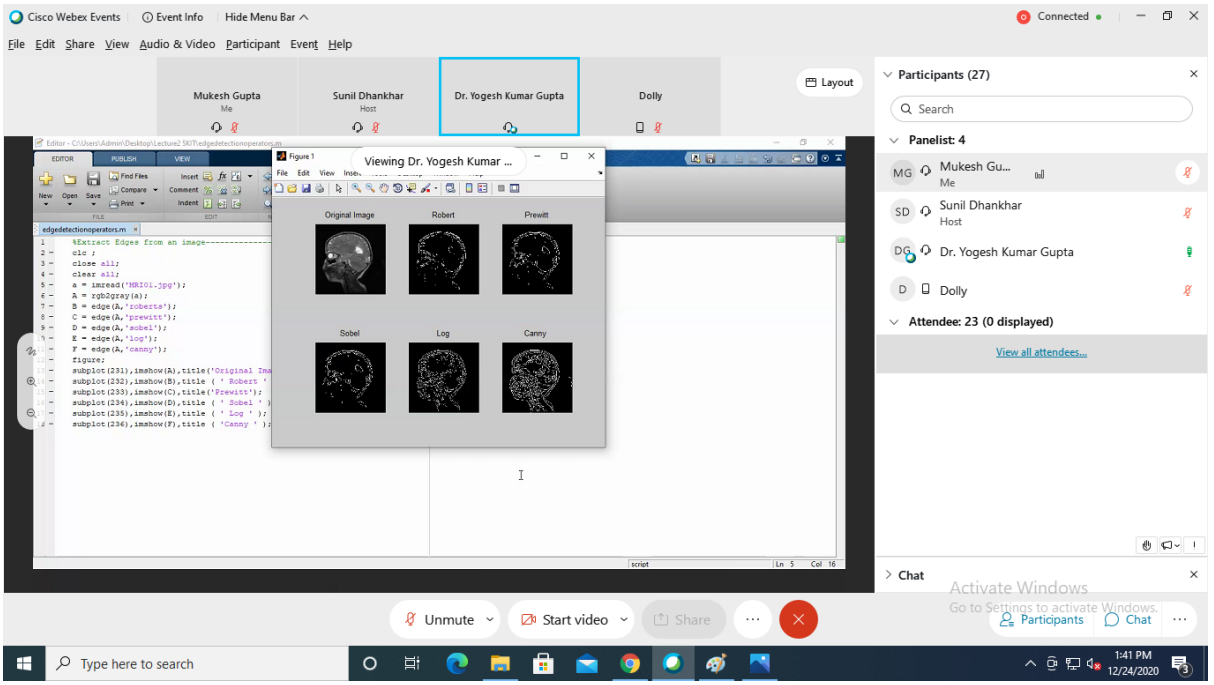
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