Report

FDP-73 One Week Interdisciplinary Online FACULTY DEVELOPMENT PROGRAMME

Organised by

Department of Computer Science, kalindi College

On

"Applications of Al-Machine Learning and Soft Computing Techniques"

29th Jan - 3rd Feb 2022 (1:30 pm to 5:00 pm) in collaboration with

MAHATMA HANSRAJ FACULTY DEVELOPMENT CENTRE

(A Centre of MoE, Govt. of India under PMMMNMTT Scheme)

HANSRAJ COLLEGE

Hansraj College Organising Team Prof. (Dr.) Rama

Principal, Hansraj College & Chairperson, MHRFDC

Coordinator, MHRFDC : Dr. Jyoti Bhola Dy. Coordinator, MHRFDC:Mr.Ashutosh Yadav

Kalindi College Organising Team

Chief Patron : Prof Naina Hasija (Principal, Kalindi College)

Convener : Dr. Nidhi Arora(Associate Professor, Computer Science, Kalindi College)

Coordinators : Dr. Sapna Varshney (Assistant Professor, Computer Science, kalindi College)

Ms. Kanishka Bamania (Assistant Professor, Computer Science, kalindi College)

A one-week Interdisciplinary Faculty Development Programme was organized by Kalindi College in collaboration with Mahatma Hansraj Faculty Development Centre, Hansraj College, University of Delhi from 29th Jan - 3rd Feb 2022. The objective of this FDP is to present recent trends and provide the guidelines to explore Machine Learning and Soft Computing techniques for research work in varied fields of applications and research.

The Artificial Intelligence field is in its best phase currently driving the whole world with Machine Learning algorithms. These buzzwords have therefore now part of all the fields where data handling is required , be it commerce, physics, chemistry, Mathematics, zoology, Business administration , geography even humanities , languages, artistic and related fields , you name a work area , and you will find good application of Machine learning techniques .

The aim of the FDP was to dedicatedly provide training in this field, and to open varied applications of Machine learning to varied fields. This FDP provided a basic understanding of Machine Learning to our interdisciplinary attendees and give them ample space and clues to carry on their research work by using these techniques in their fields.

With 82 registrations from teaching and research scholars not only from Delhi/NCR but also from other states of India, the FDP was organized successfully, with 10 very informative and active sessions. Details of all sessions along with their report are listed below.

	Day 1 (Saturday) - 29 Jan 2021
1:00 – 1:30 PM	Inaugaral of the FDP started with a warm welcome of the respected Principal Ma'am,
Inauguration	Prof. Naina Hasija of Kalindi College who joined for the inaugural event; and Principal Ma'am, Prof. Rama of Hansraj College for their constant support, encouragement and
Co-ordinators:	guidance; Dr. Jyoti Bhola (Co-ordinator), Mr. Ashutosh Yadav (Deputy Co-ordinator) and their team from Mahatma Hansrai Faculty Development Centre, Hansarai College in
	organizing the FDP; all the experts / resource persons who will be enlightening the audience with knowledgeable sessions; Kalindi College organizing team – FDP convenor
Dr. Sapna Varshney	Dr. Nidhi Arora, Dr. Sapna Varshney and Ms. Kanishka Bamania as co-ordinators.
Ms. Kanishka Bamania	Prof. Naina Hasija, Principal Kalindi College, enlightened the audience with her words of wisdom and encouragement. Dr. Nidhi Arora, FDP Convenor also welcomed everyone and presented her thoughts about the FDP. The participants were told about the rules to be followed regarding proceedings of the FDP. Inaugural ended with a vote of thanks to the Principal Ma'am, organizing committee from Hansraj College and Kalindi College and the resource persons.







Day 2 (Monday) - 31 Jan 2021

1:30 – 3:00	The session started by welcoming the resource person and the participants to the first
РМ	session of the EDP. The resource person for this session: Dr. Ashish Kumar Trinathi
	session of the right. The resource person of this session. Dr. Ashisi rearian inpating
	Assistant Professor with the Department of Computer Science & Engineering, Malviya
Session 1:	National Institute of Technology (MNIT), Jaipur, was introduced. In the session, a basic
	introduction to Machine Learning (ML) was given. The session progressed with a
Supervised	discussion of supervised learning algorithms - attributes of a dataset, label of data
Learning	instances - to make predictions on unknown data. How to build and train a model and
with Naive	then testing the model to improve accuracy of the model in making predictions. Naive
Baves	Bayasian classifier was discussed in detail with the help of an example for better
Algorithm	Dayesian classifier was discussed in detail with the help of all example for beller
Algorithm	understanding of the participants. Several questions were asked by the participants
	related to the session which were answered to their satisfaction by the resource person.
	The session concluded with a vote of thanks to the resource person. The participants
	were informed to join again for Session 2 of the day
Co-	were informed to join again for dession 2 of the day.
ordinator	
orumator.	Second session started by welcoming the resource person and the participants. The
	resource person for this session: Dr. Mukesh Saraswat, Associate Professor at Jaypee
	Institute of Information Technology, Noida, was introduced. The session started with the
	institute of miorination recimology, Notice was introduced. The session statted with the

Introduction to "Deep Learning" and why it is important. The session proceeded with Dr. Sapna discussion on various different approaches to Deep learning. A wide range of applications Varshney of Deep learning were discussed. Many important aspects like Image classification, classification with localization, object detection, Semantic segmentation, Instance 3:30 - 5:00 Segmentation, Image classification on Imagenet Dataset were discussed. Also the challenges faced by Deep learning approaches were also discussed. Perceptron, Multi-Session 2: output Perceptron , Multi-Layer Perceptron Diagrams explained thoroughly. Neural Network explained step-by-step with a real-life example for a complete and better Introduction understanding. The session concluded with a vote of thanks to the resource person. to Deep Learning Participants (66) and its Dr. Sapna Varsh raj College 🛛 Dr. Nidhi Arora 🕟 sts (5) Atter Application DS Dr. Sr rs... (Co-ho Hansrai College (Host) ○ ¾ • ÷ • DN Dr. Nidhi Arora (Co-host) 💿 🔏 🌾 Ms. Kanishka Bam... (Co-host) 👁 🔏 💋 Coordinator: Ms kanishka Bamania Muto Al ∧ ⊕ ↓ ∅ ∅ ■ ENG 1351 31-01-2022 Type here to search 0 -💷 🚱 🛄 Dr. Nidhi A \bigcirc s (5) Att Dr. Sapna Vars... (Co-host, e) 👁 🔏 🖂 HC Hansraj College (Host) (B) # dick r + x2+x3+x4+x5 Dr. Ashish Tripathi . Dr. Nidhi Arora (Co-host) 🛛 🛞 🔏 💋 Independent Variable MIR MK Ms. Kanishka Bam... (Co-h st) (1) / (2) 1 parture. ×11 ×21×3,×41 ×5 throuting, cold, breade, age, 904. -- in r lesh D5 (1000) + haund . (200) Muto All ^ ⊕ ∉ @ ■ ENG 1409 💷 🚱 🖸 🕑 Type here to se 0 -Lenovo 📅 < Participants (69) raj College 🛛 Ms. Kanishka B... 🕟 Panelists (5) SM Sushil Malik Ajay Sharma AG Akanksha Gupta Chat GM thanks 55 thankyou sir.. To: Hosts and panelists ~ 00 • Type here to search 0 0 6 OC -



Day 3 (Tuesday) - 1 Feb 2021

1:30 – 3:00 PM	
Session 1:	
Bag-of-words for Classification	
Co-ordinator:	
Dr. Sapna Varshney	
3:30 – 5:00 PM	
Session 2:	
Swarm and Evolutionary Optimization	

The session started by welcoming the resource person and the participants to the first session of the FDP. The resource person for this session: Dr. Raju Pal, Assistant Professor at Jaypee Institute of Information Technology, Noida, was introduced. In the session, a basic introduction to Image Classification, applications of image classification and challenges were presented. The session progressed with a detailed discussion of a supervised Machine Learning algorithm, Bag-of-words for Classification (originally for text classification), for medical image analysis - basic framework, feature extraction, feature encoding (each medical image is converted to bag of visual words / histogram), training the model (SVM, or K-means), testing the model, and evaluation metrics were discussed. Hands-on demo was given to the participants on MATLAB software. Several questions were asked by the participants related to the session which were answered to their satisfaction by the resource person. The session concluded with a vote of thanks to the resource person. The participants were informed to join again for Session 2 of the day.



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Second session started by welcoming the resource person and the participants. The resource person for this session: Dr. Mukesh Saraswat, Associate Professor at Jaypee Institute of Information Technology, Noida was introduced. The session started with a basic introduction to "The Optimization and the problems related with it". A Mathematical representation of Optimization Problem with an example explained. Two basic Optimization methods : 1) Deterministic and 2) probabilistic were discussed. After that many algorithms like Nature inspired algorithms and Evolutionary algorithms were discussed thoroughly.In Swarm based optimization, a step by step procedure explained on particle swarm optimization. After that Optimization in computer vision explained briefly with Image classification and Image Segmentation were explained in brief.All the questions imposed by the participants were resolved on the spot by the resource person. The session concluded with a vote of thanks to the resource person.





the session started by welcoming the resource person and the participants to the first ession of the FDP. The resource person for this session: Dr. Harish Sharma an Associate professor at Rajasthan Technical University, Kota in epartment of Computer Science & Engineering. The session started with an
troduction to the "Employed bee phase algorithm" which was further elaborated and aplained step by step. Later on , continuing the topic a step by step procedure of the tificial Bee Colony (ABC) algorithm was explained throughout the session with cusing on so many intriguing measures. Some questions were asked by the articipants related to the session which were answered to their satisfaction by the source person. The session concluded with a vote of thanks to the resource person. The participants were informed to join again for Session 2 of the day.







