



S. J. P. N Trust's

Hirasugar Institute of Technology, Nidasoshi

Inculcating Values, Promoting Prosperity

Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.

Accredited at 'A' Grade by NAAC

Programmes Accredited by NBA: CSE, ECE, EEE & ME.

E&CE Dept.

FDP

Activity Report

2019-20(Even)

Date of Activity held and Time:	14/07/2020 to 16/07/2020 11.30am- 04.00pm
Name of Activity:	Three days National Level Online Faculty Development Program on “Advanced Research Trends in Image Processing”
Type of Activity: (cultural/curricular/co-curricular)	Co-curricular
Resource Persons / Invitee:	1. Dr. Maheshkumar H. Kolekar, IIT, Patna 2. Dr. Lakshman Mahto, IIIT, Dharwad 3. Dr. Shyam Lal, NITK, Surathkal 4. Dr. Yogesh B. Shelke, ARANCA, Mumbai 5. Dr. Shashidhar G. Koolagudi, NITK, Surathkal 6. Dr. Chinmay Chakraborty, BIT, Mesra
Professional Details of Resource Person:	1. Associate Professor, Department of Electrical Engineering IIT, Patna 2. Assistant Professor, Department of Mathematics, IIIT, Dharwad 3. Assistant Professor, Department of E&CE, NITK, Surathkal 4. Assistant Manager, ARANCA, Mumbai 5. Associate Professor, Department of CSE, NITK, Surathkal 6. Assistant Professor, Department of E&CE, BIT, Mesra
Participants can Apply from:	Faculty Members / Research Scholars from the University / Engineering Colleges Recognized by AICTE/ UGC.
No. of Participants:	47
Activity In charge:	1. Mr. D. B. Madihalli, Assistant Professor 2. Mr. S. S. Itannavar, Assistant Professor 3. Mrs. B. P. Khot, Assistant Professor
Supporting Staff	Shri. P. S. Desai, Foreman



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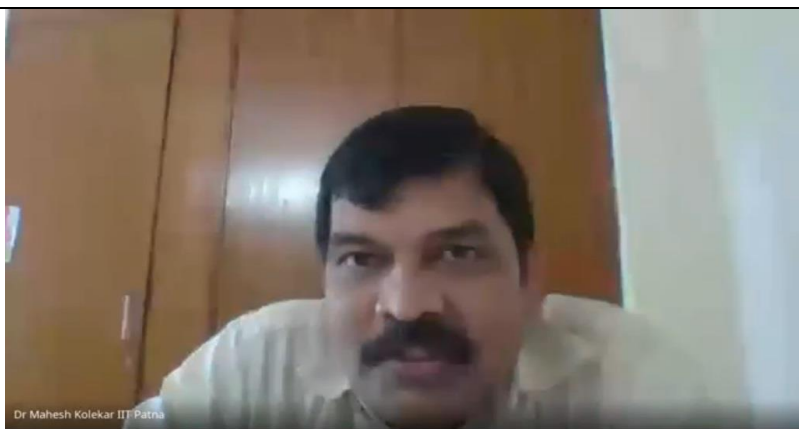
Description of Activity: Three days National Level Online Faculty Development Program on “Advanced Research Trends in Image Processing” was organized on 14/07/2020 to 16/07/2020. The FDP was organized by Electronics and Communication Engineering Dept. HSIT, Nidasoshi. Resource persons for the FDP were 1. Dr. Maheshkumar H. Kolekar, IIT, Patna, 2. Dr. Lakshman Mahto, IIIT, Dharwad, 3. Dr. Shyam Lal, NITK, Surathkal, 4. Dr. Yogesh B. Shelke, ARANCA, Mumbai, 5. Dr. Shashidhar G. Koolagudi, NITK, Surathkal, 6. Dr. Chinmay Chakraborty, BIT, Mesra. In this FDP they delivered some advanced research methods to the participants to develop applications of Image Processing.

The FDP focused on Image Processing is a scientific discipline as well as technology frontier, with immense applications. Image processing is a growing research field where many revolutionary ideas and efficient algorithms have been developed over the past few decades. The objective of this FDP is to introduce the participants to the world of Image Processing, and give an insight into how and where it can be used. This FDP will focus on Research procedures. As a researcher, it is mandatory for one to know the basics of research, in order to satisfy the purpose of research and establish an acceptable conclusion. Every session was interactive and also Participants gave their feedback.

CO No.	CO Defined	RBT Level	Relevance POs	Relevance PSOs
1	Inculcate innovative and research oriented attitude.	L4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO11, PO12	PSO1, PSO2
2	Posses Omni-directional knowledge and information about image processing techniques applied on images coming from various sources.	L4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO11, PO12	PSO1, PSO2
3	Understand Practical approaches spanning including fundamental / conventional to latest applications from seasoned practitioners in this field.	L4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO11, PO12	PSO1, PSO2

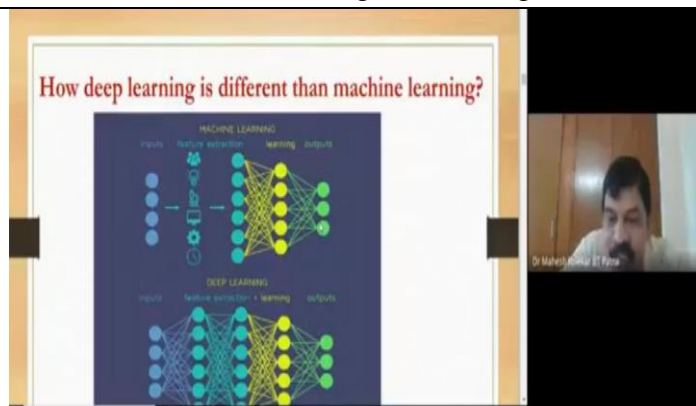
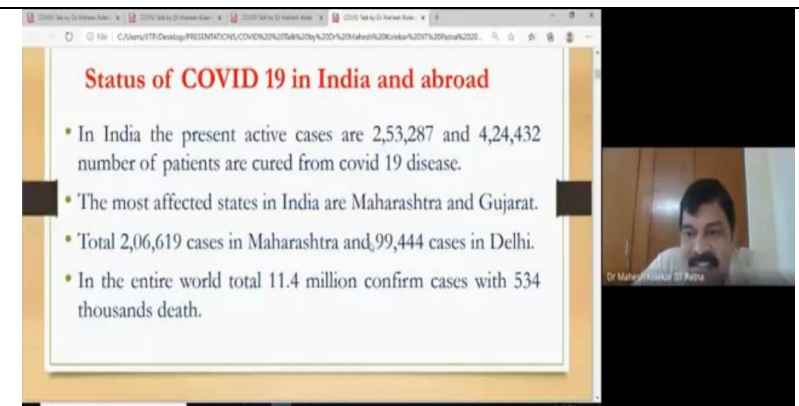


Divine Presence of Shri. Mahaswamiji at the time of Inauguration of Three days National Level Online FDP on “Advanced Research Trends in Image Processing”



Keynote Address by Dr. Maheshkumar H. Kolekar, at the time of Inauguration of Three days National Level Online FDP on “Advanced Research Trends in Image Processing”

Presidential remarks by our beloved Principal Dr. S. C. Kamate at the time of Inauguration of Three days National Level Online FDP on “Advanced Research Trends in Image Processing”



Session 1: Deep Learning Techniques for Brain Tumor Detection, by Dr. Maheshkumar H. Kolekar, IIT, Patna



EXAMPLE: TRUNCATED SVD

π The reconstruction \tilde{x}_k obtained for the blur of the pumpkins by using $k=800$ (instead of the full $k=N=169744$).

π Better than the computed reconstruction before but far from good.

π For $\text{rank}(A_k) = k < \min(m, n)$, we can define the reconstruction $\tilde{x}_k = A_k^\dagger B$.

14-07-2020 DR. LAKSHMAN MAHTO, IIT DHARWAD 24

A MATHEMATICAL MODEL OF IMAGE DEBLURRING

π The blurred image is precisely what would be recorded in the camera if the photographer forgot to focus the lens.

π We need a mathematical model relating the blurred image to the true image

14-07-2020 DR. LAKSHMAN MAHTO, IIT DHARWAD 25

Session 2: Applications of Optimization in Image Processing, by Dr. Lakshman Mahto, IIT, Dharwad

Applications of DL in Image Processing

□ **Image Classification With Localization**

- Image classification with localization involves assigning a class label to an image and showing the location of the object in the image by a bounding box.
- Some examples of image classification with localization include:
 - Labeling an x-ray as cancer or not and drawing a box around the cancerous region.
 - Classifying photographs of animals and drawing a box around the animal in each scene.
- PASCAL Visual Object Classes datasets, or PASCAL VOC for short (e.g. VOC 2012).
- The ILSVRC2016 Dataset: 150,000 photographs with 1,000 categories of objects.

Dr. Shyam Lal

Deep Learning for Semantic Segmentation

□ **From classification to semantic segmentation:**

□ If we upsample the output in previous slide, then we can calculate the pixel-wise output (label map) as below:

Fig. FCN for Schematic Segmentation

Dr. Shyam Lal

Session 3: Applications of Deep Learning in Image Processing, by Dr. Shyam Lal, NITK, Surathkal

Medical Image Processing - A Clinical Perspective

Content

- Medical image processing for clinicians
- New applications and research frontiers
- Ophthalmological disease diagnostics
- Unmet clinical needs

Dr. Yogesh Shelke

Database USPs

Database	Application
DRIVE 11	Blood vessel segmentation
STAR4E 12	Blood vessel segmentation; Optic disk detection
DIARETDB0	Diabetic retinopathy detection
DIARETDB1	Diabetic retinopathy detection
e-ophtha_EX	Diabetic retinopathy detection
e-ophtha_MA	Diabetic retinopathy detection
Messidor	Diabetic retinopathy detection
HE-MED	Hard exudate detector; Diabetic macular edema assessment
Retinopathy Online	Microaneurysms detection
ORIONS-OB	Optic nerve head segmentation
RIA-ONE	Optic nerve head segmentation

Dr. Yogesh Shelke

Session 4: Image Processing and Healthcare Perspectives, Dr. Yogesh B. Shelke, ARANCA, Mumbai



OUTLINE

- Motivation and Applications
- Introduction to speech processing
- Issues in speech processing
- Approaches and solutions
- Summary and conclusion



Shashidhar G Koolagudi Faculty CSE Dept

USER INTERFACE MODES

- CUI (COMPUTER LITERATES)
- GUI (COMMON MAN WITH LITTLE COMPUTER KNOWLEDGE)
- SUI (ANYBODY)



Shashidhar

Session 5: Speech Processing and Research Avenues, by Dr. Shashidhar G. Koolagudi, NITK, Surathkal

Chronic Wounds (CW)

Any wound which has remained unhealed for longer than 6 weeks [Cutting & Tong 2006]

Systemic condition Demography

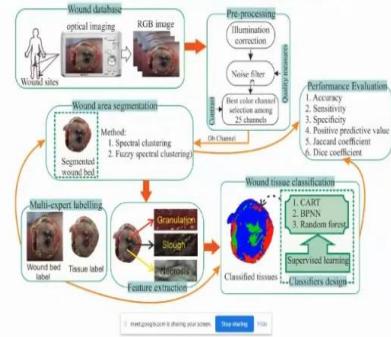
- Globally, > 35 million people suffering [Mustoe et al. 2006]
- Indian scenario, Prevalence : 4.48/1000 population [Shukla et al. 2005]
- Mostly affects aged people [McDonald 2005]
- 25% expected by 2015 with growing aged population [WHO 2007]
- Progressively Increasing as **SILENT EPIDEMIC**

Major Threat to Public Health & Economy



Prof Chandan Chakraborty

Graphical Abstract of Proposed Approach



Prof Chandan Chakraborty

Session 6: Telemedicine Based Smart Chronic Wound Imaging, by Dr. Chinmay Chakraborty, BIT, Mesra

Mr. D. B. Madihalli Mr. S. S. Itannavar Mrs. B. P. Khot
 Program Coordinators



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Recognized under Section 2(f) of UGC Act, 1956

**3 DAYS NATIONAL LEVEL ONLINE
FACULTY DEVELOPEMENT PROGRAM
ON**

**Advanced Research Trends
in Image Processing**
14th to 16th July 2020



Organized by

Department of

Electronics and Communication Engineering

Resource Persons

Resource Persons are from Reputed Institutes like IIT, IIIT, NITK, BIT and reputed industry.

Who can Apply

Faculty Members / Research Scholars from the University / Engineering Colleges recognized by AICTE / UGC.

Important Instructions

- Registration fee for the program is ₹200/-
- Maximum number of Participants is limited to 50.
- Selection on first come first serve basis. Intimation of selection will be sent through Email on **13th July 2020**.
- Scanned copy of filled registration form and NEFT receipt must be sent to **fdp.ece@hsit.ac.in** on or before **12th July 2020**.
- Google Meet Platform is used for the conduction of FDP.
- Google Meet link will be communicated through registered Email.

NEFT Details

Account Name: Principal, Hirasugar Institute of Technology, Nidasoshi

Bank Name: Karnataka Vikas Grameen Bank

Branch : Nidasoshi Extension

IFSC Code: KVGB0002509

Account Number: 89084717199

PROGRAM OBJECTIVES

- To introduce the real time applications of image processing to the participants.
- To provide state-of-the-art knowledge in the era of image processing.
- To orient participants towards developing their own research plans in Image Processing.
- To enable the research scholars to enhance their knowledge in the domain of Image Processing.

EXPECTED OUTCOMES

Participants should be able to

- Inculcate innovative and research oriented attitude.
- Posses Omni-directional knowledge and information about image processing techniques applied on images coming from various sources.
- Understand Practical approaches spanning including fundamental / conventional to latest applications from seasoned practitioners in this field.

ADDRESS FOR CORRESPONDANCE

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