25 Years of Glorious Service to Society

COLLEGE OF ENGINEERING
(AUTONOMOUS)

SANKAR FOUNDATION Eye Hospital
Committed to the Community

A SECOND FIVE DAY NATIONAL E-WORKSHOP ON MEDICAL IMAGE ANALYSIS USING ARTIFICIAL INTELLIGENCE

24th to 28th April 2023 (Monday to Friday)

Jointly organized by

Centre for Medical Imaging Studies(CMIS), Department of ECE
Gayatri Vidya Parishad College of Engineering (A)
Visakhapatnam, Andhra Pradesh

Sankar Foundation Eye Hospital & Institute
Visakhapatnam, Andhra Pradesh

Registration link: https://forms.gle/S6GwYqbTUwFLs1mu9

Last date for Registration : 20th April 2023

Gayatri Vidya Parishad College of Engineering(A)

Gayatri Vidya Parishad (GVP) has been established in the year 1988 as an educational trust by a group of eminent educationists, academicians & industrialists to empower the young generation through high quality technical education. The Engineering education by GVP society was first originated by establishing Gayatri Vidya Parishad College of Engineering (GVPCE) in the year 1996 with the divine blessings of Sadguru Sri. K. Sivananda Murthy Garu. The institute has flourished in various facets of Academics and Research by achieving the pinnacle of success. This institute is offering 10 B.Tech., 9 M.Tech., and one MCA programme under the affiliating university JNTUK, Kakinada. The college has brought in many initiatives for the benefit of students with autonomous status granted by UGC in 2009. The status of autonomy is further extended by UGC up to 2025. The institute has been reaccredited second

time by NAAC with 'A' grade with CGPA of 3.47/4.0. All the eligible seven B.Tech. programs are accredited by NBA at least twice. The institute received funds to the tune of Rs. 5 Crores under Technical Education Quality Improvement Program (TEQIP), S.C-1.2. The college received Rs. 12 Crores from funding organizations AICTE / DST / NBHM / ARB etc. towards 45 R&D projects. The institute encourages collaborative learning between industry and academia as a means of reinforcing its curriculum with practical and real world experiences.

Sankar Foundation Eye Hospital , Visakhapatnam

Sankar Foundation Eye Hospital (SFEH) (Registered No. 9485/84) is a Charitable Trust. Its core value is SERVICE TO MAN IS SERVICE TO GOD". The eye institute has been in operation since 1997. The foundation stone of hospital building was laid by Sir John Major, Former Prime Minister of United Kingdom and accompanied by Lord Mervyn Davies, Group Chief Executive, Standard Chatered Plc on 9th March 2005. The eye hospital is serving the population in Visakhapatnam, Vizianagaram, Srikakulam, East Godavari Districts of Andhra Pradesh and bordering districts of Odisha and Chhattisgarh. The Government of Andhra Pradesh recognized SFEH as the Best Social Organization in the year 2002. The eye hospital has full-fledged super speciality clinics including Anterior Segment and Posterior segment, Vitreo-Retinal Services, Cornea, Glaucoma, Paediatric Ophthalmology, and Orbit and Oculoplasty. The institute is managed by 31 highly qualified ophthalmologists and so far, 3.6 lakh operations are performed. Out of all, 77% of the operations are free of cost to the patient.

ORGANIZING COMMITTEE

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Dr. Virender Sachdeva, Senior Opthalmologist, LVPEI
Dr. Anusha, Associate Professor, GVPIHCMT
Dr. A. Narasimha Rao, Assistant Professor, GVPIHCMT

About Workshop

The primary objective of this e-workshop is to discuss the importance of medical image analysis in health sector. Healthcare sector is a high priority sector and people expect utmost level of care and services regardless of cost. It has not achieved social expectation even though it consumes huge percentage of budget. Mostly, the interpretations of medical data are being done by medical expert. In terms of image interpretation by human expert, it is quite limited due to its subjectivity, complexity of the image, extensive variations exist across different interpreters. In the recent past, the Artificial Intelligence (AI) has achieved tremendous interest in every domain, especially in medical image analysis. This area is of prime importance due to significant and growing demand in the field of AI for analyzing different images to detect various pathological effects of human body.

This e-workshop mainly aims to bridge the gap between doctors and researchers by discussing the advancement of medical technology in the imaging area. One of the most promising areas of health innovation is the application of artificial intelligence (AI), primarily in medical imaging. The AI has been providing exciting solutions with good accuracy for medical imaging. AI is the essential boosting power of processing massive number of medical images and therefore uncovers disease characteristics that fail to be detected by the naked eyes. The objectives of this e-workshop is to review the history of AI in medical imaging research, the current role, the challenges need to be resolved before AI can be adopted widely in the clinic, and the potential future. It is the most effective and supervised machine learning approach. This approach uses models of deep neural network which is variation of Neural Network but with large approximation to human brain using advance mechanism as compared to simple neural network.

This e-workshop is designed to facilitate the participants to gain knowledge in different research areas in medical image processing. In this e-workshop, the clinical aspects and the associated problems faced by the expert doctors in diagnosing the patients shall be discussed. Further, a series of talks on the state of the art AI architectures and its optimization techniques will be delivered by potential speakers from reputed institutions. This e-workshop intends to provide hands-on practice session to the participants about various latest libraries in python platform that enables for the development of different AI architectures. On this ground, GVPCE (A) and SFEH planned jointly to organize this e-workshop by attracting research scholars, students, faculty and industry professionals to discuss various cutting edge technologies in the field of medical imaging using AI and making this e-workshop as one of the most premiere & admired workshop of the year 2023.

Session Objectives

- ⋆ To introduce the clinical aspects of medical images for better understanding.
- ⋆ To explain and demonstrate the impact of medical images in diagnosing the various diseases.
- ⋆ To describe and demonstrate image processing, and medical image processing techniques using artificial intelligence.
- ⋆ To explain the implementation and optimization techniques of an AI model.
- ⋆ To demonstrate various libraries in python platform for implementation of a robust AI model.

Learnings by the participants at the end of the workshop:

- Participant will understand various libraries of deep learning in Python platform.
- Participant will be able to analyze the medical images and process them to detect various disorders.
- Participant will be able to process the medical images using different AI techniques.
- Participant will be able to apply parameter optimization techniques while designing an accurate AI model.
- Participant will gain an intuitive understanding of the concepts and tools to build the model for any learning problem.

Who can attend : Students, Research Scholars, Teaching Faculty, Industry experts

Platform: Webex (Online)

- **The E-certificates** will be jointly issued by both GVPCE (A) and SEFH, Visakhapatnam. The e-certificates will be sent to the registered mail ids to the delegates after successful participation in the e-workshop.

REGISTRATION FEE:

Faculty / Industry Professionals: Rs. 1000/-

Research scholars: Rs. 500/-

Students: Rs. 300/-

AGENDA

Day-1 Monday, 24th April 2023

10.30 am to 12.00 noon (IST)

Dr. Ram Bilas Pachori

Professor, Department of Electrical Engineering, IIT Indore

Topic: Signal processing driven machine learning for medical image processing

1.00 pm to 2.30 pm (IST)

Dr. Birendra Biswal

Lead Mentor and Professor,
Center for Medical Imaging Studies (CMIS)
Department of ECE, GVPCE(A)

Topic: Impact of spatial features on AI models in medical image analysis

2.30 pm to 4.00 pm (IST)

Dr. T Raveendra, Opthalmologist
Director - CQI & Research, SFEH

Topic: AI Based Glaucoma detection Systems: Methods, Trends and Challenges

Day-2 Tuesday, 25th April 2023

10.00 am to 11.30 am (IST)

Dr. M. S. Manikandan
Associate Professor, IIT Palakkad

Topic: Contactless Vital Sign Monitoring Using Multimodal Cameras: Concepts, Key Challenges and Future Directions

11.30 am to 1.00 pm (IST)

Dr. Ganapati Panda
Former Professor
IIT Bhubaneswar

Topic:ML and DL based early Diagnosis of Heart Disease, Breast Cancer and Covid19 from speech signal

2.00 pm to 4.00 pm (IST)

Ms. Geetha Pavani P
Senior Research Associate
CQI & Research, SFEH

Topic:Hands-on Session on Medical image Processing using Artificial intelligence in python platform

Day-3 Wednesday, 26th April 2023

10.00 am to 11.30 am (IST)

Dr. Tapan Kumar Gandhi
Associate Professor
Department of Electrical Engineering ,
IIT Delhi

Topic: AI in Medical Image Analysis: Challenges and Opportunities

11.30 am to 1.00 pm (IST)

Dr. Anup Singh
Associate Professor,
Center for Biomedical Engineering,
IIT Delhi

Topic: The Role of AI in MRI Data Acquisition and Analysis

2.00 pm to 04.00 pm (IST)

Mr . Sreekar Tankala
System Engineer
TCS digital, Hyderabad

Topic: Hands-on Session on Medical image Processing using Artificial intelligence in python platform

Day-4 Thursday, 27th April 2023

Dr. Avijit Bansal
Consultant (Medical)
National Center for Assistive Health Technology
AIIMS- New Delhi

Topic: 10 Steps to Successful MedTech Innovation

11.30 am to 1.00 pm (IST)

Dr. Deepak Ranjan Nayak
Assistant Professor
MNIT Jaipur

Topic: A Journey of medical image analysis from ML to DL: A Case Study on COVID-19 a chest radiography images

2.00 pm to 3.30 pm (IST)

Mr. Sounak Dey
Senior Scientist
TCS Research, India

Topic: Low-power Edge Intelligence with Neuromorphic Computing

3.30 pm to 5.00 pm (IST)

Dr. Amit Mehndiratta
Associate Professor
Center for Biomedical Engineer
IIT Delhi

Topic: AI in Quantitative Cancer Imaging for Response Assessment

Day-5 Friday, 28th April 2023

10.00 am to 11.30 am (IST)

Dr. Vivek Kanhangad
Associate Professor
IIT Indore

Topic: A dual-branch deep network for diagnosis of thoracic diseases

11.30 am to 1.00 pm (IST)

Dr. Arnav Bhavsar
Associate Professor
IIT Mandi

Topic:Applications of Deep Learning for Medical Image Analysis

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Coordinators: 1. Dr. Kusuma Kumari Ch
Associate Professor,
Department of ECE, GVPCE(A)
2. Dr. R. Surya Prakasa Rao
Assistant Professor,
Department of ECE, GVPCE(A)
3. Ms. Geetha Pavani P
SRA, CQIR, SFEHI

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