25 Years of Glorious Service to Society

COLLEGE OF ENGINEERING
(AUTONOMOUS)

DISTINGUISHED SERIES FIVE DAY NATIONAL WORKSHOP ON MEDICAL IMAGE ANALYSIS USING ARTIFICIAL INTELLIGENCE

(Hybrid Mode)

22nd April to 26th April 2024

Jointly organized by

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

Simadri Surya Eye Hospital
Susheela Public Charitable Trust
Nabarangapur, Odisha

Registration link: https://forms.gle/vTVzb296Pvu1ANTM8

Last date for Registration : 20th April 2024

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.

Simadri Surya Eye Hospital , Nabarangapur, Odisha

Simadri Surya Eye Hospital (SSEH) is operated & managed by Susheela Public Charitable Trust located at Nabarangpur town and a municipality in Nabarangapur district in the Indian state of Odisha. The core value of the eye hospital is to provide "service to the poor, marginalized, helpless & downtrodden people suffering with the eye-related disorder" which is the real service to God and the highest form of practical holiness". Simadri Surya Eye Hospital is committed to providing exceptional services with innovative technology and safety measures by adhering to the stringent guidelines of the healthcare body. It is well furnished with advanced operation theatres equipped with modern equipment to provide immediate treatment to the tribal people of neighbouring Odisha and Chhattisgarh state. The hospital primarily focuses on providing its enduring effort to the 13 primitive tribal communities and individuals living in the Below Poverty Line (BPL) category people in and around the areas of Nabarangpur, Koraput, Bhawanipatna, Jagdalpur, and other adjacent 11 districts of Odisha & Chhattisgarh state. The hospital is managed by qualified ophthalmologists having diverse specializations to tackle multiple disorders associated with eye.

ORGANIZING COMMITTEE

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Dr. Virender Sachdeva, Senior Opthalmologist, LVPEI
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 SSEH 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 2024.

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

Venue: Gayatri Vidya Parishad College of Engineering, Kommadi, Visakhapatnam.

Online Platform: Google meet

- **The certificates** will be jointly issued by both Gayatri Vidya Parishad College of Engineering, Visakhapatnam, Andhra Pradesh and Simadri Surya Eye Hospital, Nabarangapur, Odisha. The certificates will be sent to the registered mail ids to the delegates after successful participation in the workshop.

REGISTRATION FEE:

Faculty / Industry Professionals: Rs. 1500/-

Research scholars: Rs. 800/-

Students: Rs.500/-

AGENDA

Day-1 Monday, 22nd April 2024

10.30 am to 12.00 noon (IST)

Dr. Ram Bilas Pachori

Professor, Department of Electrical Engineering, IIT Indore

Topic: Glaucoma diagnosis based on non-stationary signal processing approaches

1.00 pm to 2.30 pm (IST)

Dr. Birendra Biswal

Dean (R&D) and Professor, Department of ECE, GVPCE(A)

Topic: Impact of multi-scale features on AI models

2.45 pm to 4.15 pm (IST)

Dr. Amit Mehndiratta
Associate Professor, IIT Delhi

Topic: AI in Quantitative Cancer Imaging for Response Assessment

Day-2 Tuesday, 23rd April 2024

10.00 am to 11.30 am (IST)

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

Topic: Computer Vision Based Neonatal Jaundice Detection system: Methods, Trends and Challenges

11.40 am to 1.10 pm (IST)

Dr. Pradyut Biswal,
Professor, IIIT Bhubhaneswar

Topic: Analysis of EEG signals using AI systems

2.00 pm to 4.00 pm (IST)

Mr . Sarthak Padhi
PhD Scholar
IIIT Bhubhaneswar

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

Day-3 Wednesday, 24th April 2024

10.00 am to 11.30 am (IST)

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

Topic: AI in Medical Image Analysis: Challenges and Opportunities

11.40 am to 1.10 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, 25th April 2024

10.00 am to 11.30 am (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

11.40 am to 1.10 pm (IST)

Mr. Sounak Dey
Senior Scientist
TCS Research, India

Topic: Low-power Edge Intelligence with Neuromorphic Computing

2.00 pm to 04.00 pm (IST)

Ms. Geetha Pavani P
Research Associate, SSEH

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

Day-5 Friday, 26th April 2024

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

11.40 am to 1.10 pm (IST)

Dr. Dweej Shah
Simadri Surya Eye Hospital

Topic: Demography, challenges in diagnosing Glaucoma

1.30 pm to 3.00 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. J Bhaskar Rao
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