R K COLLEGE OF ENGINEERING

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Kethanakonda (V), Ibrahimpatnam (M), Vijayawada, AMARAVATI-521456.

VIRTUAL INTERNSHIP

ON

IMAGE SEGMENTATION AND ANALYSIS

FROM 19-11-2023 to 20-12-2023

ORGANISED BY:

DEPARTMENT OF CSE

IN ASSOCIATION WITH:

Divas Foundation

RESOURCE PERSON

Dr. M. Ajay Kumar

Coordinator-IQAC
RKCE

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Date: 14-11-2023

From

Head of the Department,

Computer Science & Engineering,

RK College of Engineering,

Kethanakonda (V),

Ibrahimpatnam (M),

Vijayawada.

To

Divas Foundation Trust

Mysuru.

Sub: To Organise a VIRTUAL INTERNSHIP on **"IMAGE SEGMENTATION AND ANALYSIS"**.

Our department is planning to conduct a virtual internship in "IMAGE SEGMENTATION AND ANALYSIS" for our IV B. Tech students, preferably from 19-11-2023 to 20-12-2023. If acceptable to you, I request you to design the Syllabus and send us the documentation.

Thanking you,

Yours Sincerely

HOD – CSE

Coordinator-IQAC
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Date: 15-11-2023

To

The Head of the Department,
Electronics and Communication Engineering,
RK College of Engineering,
Kethanakonda (V),
Ibrahimpatnam (M),
Vijayawada.

Sub: Acceptance to Organise a Virtual Internship **on IMAGE SEGMENTATION AND ANALYSIS**"

We are assigning a trainer to organize a Virtual Internship on **IMAGE SEGMENTATION AND ANALYSIS**" through online mode from 19-11-2023 to 20-12-2023.

TRAINER DETAILS:

NAME OF THE TRAINER	DESIGNATION	ADDRESS
Dr. H. N. V SAI	Technical Trainer	Divas Foundation

M Rishikesh

Authorized Signatory

Coordinator-IQAC
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Date: 15-11-2023

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CIRCULAR

All IV B. Tech students are hereby informed that a virtual internship on "**IMAGE SEGMENTATION AND ANALYSIS"** is going to be organized by the Department of Electronics and Communication Engineering in association with Divas Foundation from 19-11-2023 to 20-12-2023.

Hence all the interested students are required to register immediately.

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CONTENTS

The content that will be provided in this "Image Segmentation and Analysis" course is as follows:

- **Introduction to Image Segmentation:**

  The objective and importance of image segmentation are outlined in this step. Topics include types of segmentation methods, their applications, and an overview of various algorithms. During this step, concepts such as thresholding, clustering, and edge-based segmentation will be introduced.

- **Preprocessing and Feature Extraction:**

  This stage includes preprocessing the images to improve quality and preparing them for analysis. Topics include noise removal, filtering techniques, and normalization. Feature extraction will cover the identification of edges, regions, and other critical features necessary for further analysis.

- **Segmentation Techniques:**

  This section focuses on the techniques used for image segmentation. It will explore methods like region-based, edge-based, and hybrid techniques. Advanced methods such as deep learning-based segmentation and their applications in real-world problems will also be included.

- **Analysis and Interpretation of Segmented Images:**

  This segment discusses analysing the segmented parts of an image. Topics include object recognition, texture analysis, and quantitative measures such as area, perimeter, and shape descriptors. The role of statistical and machine learning models in analysis will also be covered.

- **Applications in Real-world Problems:**

  A detailed exploration of the application of segmentation and analysis in various domains like medical imaging, satellite imagery, and industrial automation. Practical examples and case studies will demonstrate how segmentation solves critical challenges in these fields.

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- **Tools and Software for Image Segmentation:**

  A guide to using popular tools and libraries for image segmentation, such as OpenCV, MATLAB, and Python-based frameworks like TensorFlow and PyTorch. Tutorials on implementation will also be part of this step.

- **Performance Metrics for Segmentation:**

  A detailed analysis of the metrics used to evaluate segmentation accuracy and quality. Topics include Intersection over Union (IoU), Dice Coefficient, precision, recall, and F1-score. Guidance on interpreting these metrics for various datasets will also be provided.

- **Advanced Topics in Image Segmentation:**

  This section introduces cutting-edge techniques such as semantic segmentation, instance segmentation, and panoptic segmentation. Advanced machine learning techniques, including convolutional neural networks (CNNs) and transformers, will be covered.

- **Challenges in Image Segmentation:**

  An in-depth look at common challenges in segmentation, such as handling noisy data, occlusion, and variations in illumination. Strategies to overcome these challenges, such as data augmentation and robust algorithm design, will be discussed.

- **Project Implementation and Case Studies:**

  Students will work on implementing image segmentation pipelines for specific applications, such as tumour detection in medical imaging or object counting in aerial imagery. This section includes project planning, dataset preparation, and model deployment.

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Learning Outcomes

Upon completing the "Image Segmentation and Analysis" course, learners will be able to:

- Understand the fundamentals of image segmentation and preprocessing techniques.
- Apply various segmentation techniques to real-world datasets.
- Analyse and interpret segmented images for object detection and feature extraction.
- Evaluate the performance of segmentation algorithms using appropriate metrics.
- Utilize advanced tools and libraries for implementing segmentation workflows.
- Develop and deploy practical solutions for real-world image analysis problems.

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S. No	Roll No	Name of The Student
1	20MC1A0502	ATLA VENKATA NARAYANA
2	20MC1A0503	BARATAM SAI CHARAN
3	20MC1A0504	BEKKAM LAKSHMI PRASANNA
4	20MC1A0505	BHAVANASI SAI KUMAR
5	20MC1A0506	BHIMIREDDI LOVA SATISH
6	20MC1A0507	BODAPATI NIKHILESH REDDY
7	20MC1A0509	BOLEM HAMITHA
8	20MC1A0510	BOMMALABOYINA SARADA
9	20MC1A0511	BOPPANU SATISH KUMAR
10	20MC1A0512	CHALLA ANUSHA
11	20MC1A0513	CHATLA ANUSHA
12	20MC1A0514	CHELLU PUJITHA
13	20MC1A0515	CHINTHALA VIKRAM KUMAR
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15	20MC1A0517	DANDU VENKATA CHALAPATHI
16	20MC1A0518	DEVALLA RAMANTH CHOWDARI
17	20MC1A0519	DONGA LAVANYA DEVI
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19	20MC1A0522	GADDALA BHAGYA RAJU
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23	20MC1A0526	GOTLA AMULYA
24	20MC1A0527	GUDIVADA SRI RAMNAIDU
25	20MC1A0528	GURRALA MOUNIKA
26	20MC1A0529	GURRAM SAI KIRAN
27	20MC1A0530	GUTLAPALLI RAMYA
28	20MC1A0531	INAGANTI PHANINDRA BABU
29	20MC1A0532	INAPAKUTIKA LIKITH TARUN VARMA
30	20MC1A0533	INUPANURTHI PUSHPA MADHURI
31	20MC1A0534	JAVVAJI MAHESH

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34	20MC1A0537	KALAPALA KALPANA
35	20MC1A0538	KARNATI SAI PRABHU
36	20MC1A0539	KARYAMSETTI MEGHANA
37	20MC1A0540	KASIBISI PRAVEEN
38	20MC1A0541	KASTURI RAMASUBBAIAH
39	20MC1A0542	MADDU NAGA KOTESWARA RAO
40	20MC1A0543	KATIKI BALAKRISHNA
41	20MC1A0544	KOMMU TEJA
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43	20MC1A0546	KORAGANJI SIVA NAGA RAJU
44	20MC1A0547	KORAGANJI VENU KUMAR
45	20MC1A0548	KOTHAPALLI SUBHASH TEJA
46	20MC1A0549	KUMMARI GOPI KRISHNA
47	20MC1A0551	KURRA MANIKANTH
48	20MC1A0553	LINGUTLA KARUNYA
49	20MC1A0554	MANAVASI SIVA KUMAR
50	20MC1A0555	MANDEPUDI HARITHA
51	20MC1A0556	MANDRU AMULYA
52	20MC1A0557	MATTEPU CHAYA SANKAR KUMAR YADAV
53	20MC1A0558	MEKA ASWINI
54	20MC1A0559	MOPARTHI MANOHAR
55	20MC1A0560	MUNAGA CHANDU KUMAR
56	20MC1A0561	MUTYAM HARSHAD BUSH
57	20MC1A0562	MYLA ENOSH PRAKASH
58	20MC1A0502	ATLA VENKATA NARAYANA
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60	20MC1A0504	BEKKAM LAKSHMI PRASANNA

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27	20MC1A0530	GUTLAPALLI RAMYA	Ramya
28	20MC1A0531	INAGANTI PHANINDRA BABU	I. Phani
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47	20MC1A0551	KURRA MANIKANTH	Manikanth
48	20MC1A0553	LINGUTLA KARUNYA	L. Karunya
49	20MC1A0554	MANAVASI SIVA KUMAR	Sivakumar
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THIS CERTIFICATE IS AWARDED TO

BOMMALABOYINA SARADA

RK C[illegible]E OF ENGINEERING

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FROM **14-08-2023 TO 25-08-2023**

M Rishikesh Authorized
Signatory

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