

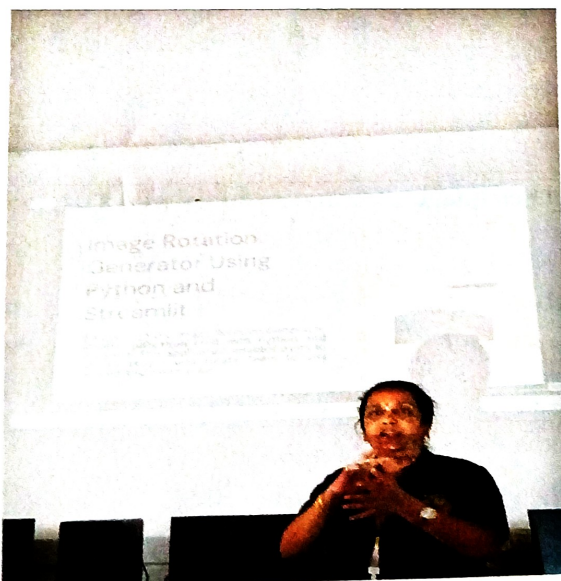


We Make You Shine  
**St. JOSEPH'S INSTITUTE OF TECHNOLOGY**  
(An Autonomous Institution)  
**St. Joseph's Group of Institutions**  
OMR, Chennai - 119

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
ACADEMIC YEAR (2024-2025) ODD SEMESTER

INNOVATIVE TEACHING

Name of Pedagogy Used:	TOOLS AND TECHNIQUES USED FOR DIGITAL IMAGE PROCESSING
Branch/Year/Sem/Sec:	CSE/III/V/C
Subject Code/Subject Name:	CS4554/DIGITAL IMAGE PROCESSING
Topic:	IMAGE ROTATION GENERATOR,BLENDING GENERATOR & AIR QUALITY DETECTION
Date/Period/Timing	26.09.2024/10.20 AM TO 11.00 AM
Description	<i>A session on Innovative teaching on Digital Image Processing which includes hands-on session on Image Rotation, Blending and Air Quality Detection.</i>

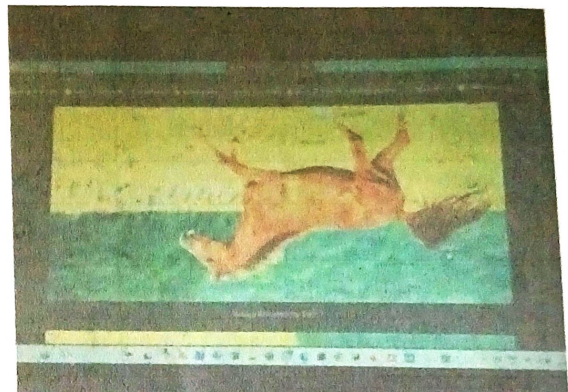
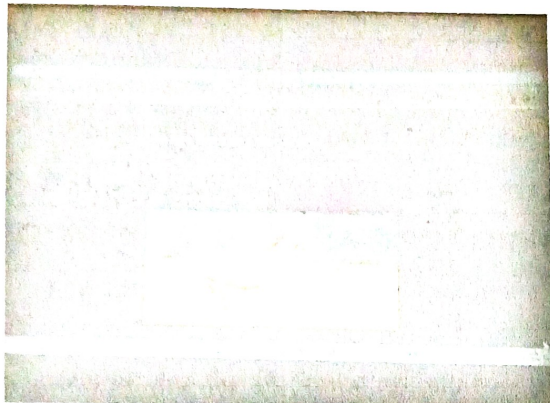




<b>Students Feedback</b>	312422104189: We learnt a lot about the practical applications of digital image processing. 312422104178: The class was quite interesting and innovative.
<b>Total No. of Students</b>	64
<b>No. of Students Present</b>	60
<b>No. of Students Absent</b>	4
<b>Action Plan for Absentees</b>	The study resources made available to the absentees for self learning and address their questions afterwards.

### DOCUMENT PROOF

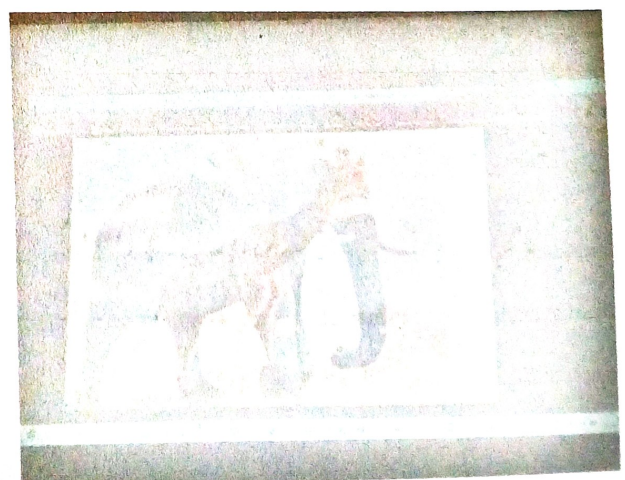
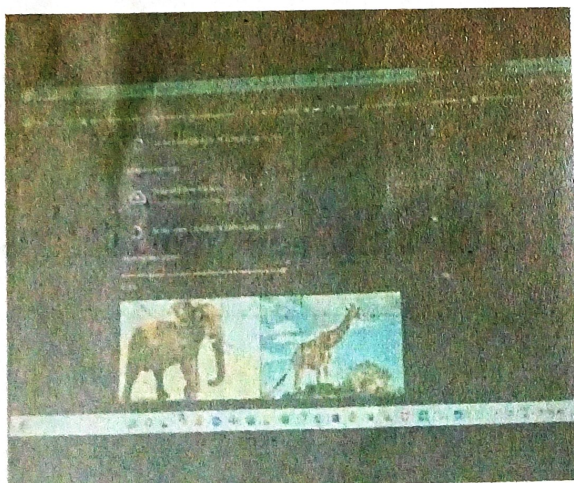
#### **ACTIVITY 1 - IMAGE ROTATION GENERATOR**



#### **Description**

The app was built using Python, offering flexibility for both image processing and web interface development. Streamlit, a framework for interactive web apps, ensured smooth user interaction and real-time display of results. Users uploaded images through a browser and the app processed and displayed them, applying predefined rotation angles of  $45^\circ$ ,  $90^\circ$ ,  $180^\circ$  and  $270^\circ$ . Each rotated image appeared instantly with a caption indicating the applied rotation angle.

#### **ACTIVITY 2 - BLENDING GENERATOR**

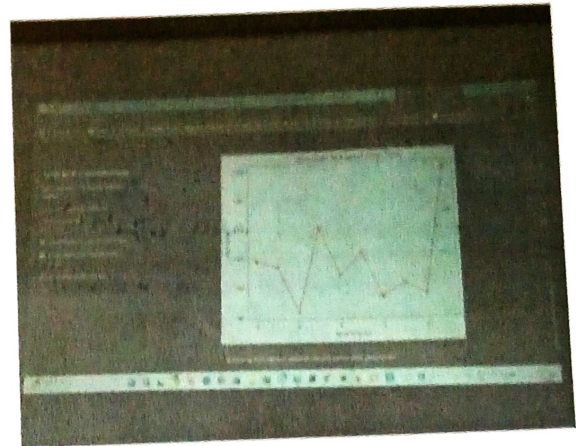
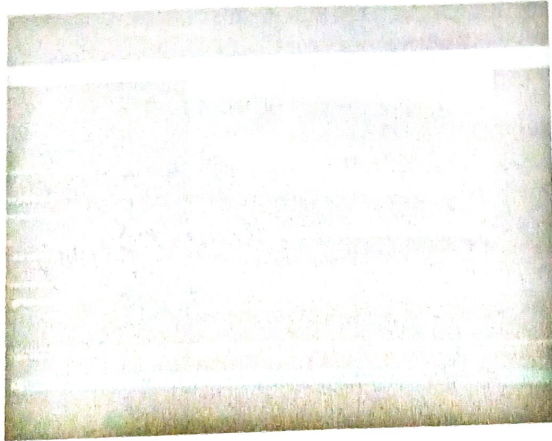




### Description

Streamlit, a Python framework was used to create interactive web applications, making it ideal for image blending projects by simplifying the user interface development. Users uploaded two images which were processed and resized to match their dimensions. A slider allowed users to adjust the blending ratio (alpha) between the images and the blended result was displayed instantly, offering real-time visualization in the app.

### ACTIVITY 3 - AIR QUALITY DETECTION



### Description

Streamlit is an open-source framework for creating interactive web apps in data science and machine learning. Scikit-learn's KMeans algorithm clusters dominant colors in images, with Pillow (PIL) processing image files for analysis. Matplotlib generates visualizations such as pollution trends and dominant color charts, while Seaborn, built on Matplotlib and creates bar charts to display detected dominant colors.

*N. Mythili*

Faculty In-charge

(Dr. N. MYTHILI)

*Dr. J. Dafni Rose*

HOD/CSE

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