



Innovative Teaching Practice: NPTEL Videos

Faculty Name	B. Indra Devi
Course Name	Machine Learning
Academic Year	2022-23
Class	III/II SEM
Topic	Using Clustering for Image Segmentation

Objective of the Activity:

NPTEL (National Programme on Technology Enhanced Learning) offers a vast library of free online courses, primarily in engineering and science, accessible through video lectures, slides, and supplementary materials, with the option for optional certification exams. NPTEL are online courses that are open to a large number of participants. They are often provided by universities or educational platforms and cover a wide range of subjects. These courses can include video lectures, readings, assessments, and discussion forums.

NPTEL is an acronym for National Programme on Technology Enhanced Learning which is an initiative by seven Indian Institutes of Technology (IIT Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and Indian Institute of Science (IISc) for creating course contents in engineering and science. NPTEL provides E-learning through online Web and Video courses in Engineering, Science and Humanities streams.

In-Class Activity:

Part 1: Watch & Note (15–20 mins)

Resource: NPTEL Lecture – "Clustering in Image Segmentation"
(Link can be shared in class LMS or chat by faculty)

Instructions:

- Watch the selected portion of the NPTEL video (faculty may highlight timestamp).
- Make notes on:
 - What is clustering in ML?
 - How is K-Means used for image segmentation?
 - Benefits and limitations of clustering in this context.

Part 2: Hands-On Coding (30 mins)

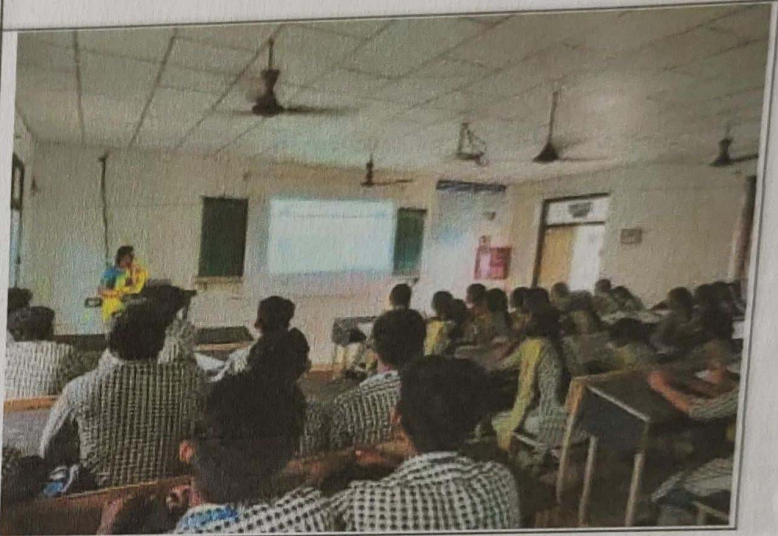
Task: Apply K-Means clustering to segment a sample image.

Steps:

1. Convert the image into a 2D array of pixels.
2. Apply K-Means clustering (choose value for K).
3. Reconstruct the image based on clustered pixel groups.
4. Visualize original vs. segmented image.

Time Allotted for Activity: 50 Minutes

Images / Screenshot of the practice

Activity on NPTEL Videos	

Benefits of NPTEL Videos:

- NPTEL are provide students with access to content from international experts, enabling them to learn at their own speed and expand their knowledge beyond traditional classroom settings.
- Career advancement: Learners or working professionals opt for NPTEL to acquire new skills. Seeking new skills and continuous learning can be advantages for career advancement, higher salaries, professional growth, or a better job opportunity.
- NPTEL certificates offer valuable recognition of specialized skills and knowledge, enhancing career prospects and demonstrating expertise in specific domains, making them a valuable asset for students and professionals alike.

Signature of Faculty Member


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