Republic of the Philippines
Laguna State Polytechnic University
Province of Laguna

Machine Problem No. 2			
Topic:	**Topic 1.2: Image Processing Techniques**	**Week No.**	3-5
Course Code:	**CSST106**	**Term:**	1st Semester
Course Title:	**Perception and Computer Vision**	**Academic Year:**	2024-2025
Student Name		**Section**	
Due date	**September 21, 2024**	**Points**	

Machine Problem No. 2: Applying Image Processing Techniques

Objective:
Understand and apply various image processing techniques, including image transformations and filtering, using tools like OpenCV. Gain hands-on experience in implementing these techniques and solving common image processing tasks.

Instructions:
Research and Comprehend:

- **Lecture on Image Processing Concepts:**
  - Attend the lecture on image processing to gain a thorough understanding of the core concepts, including image transformations like scaling and rotation, as well as filtering techniques such as blurring and edge detection.

Hands-On Exploration:

- **Lab Session 1: Image Transformations**
  - **Scaling and Rotation:** Learn how to apply scaling and rotation transformations to images using OpenCV.
  - **Implementation:** Practice these transformations on sample images provided in the lab.
- **Lab Session 2: Filtering Techniques**
  - **Blurring and Edge Detection:** Explore how to apply blurring filters and edge detection algorithms to images using OpenCV.
  - **Implementation:** Apply these filters to sample images to understand their effects.

Problem-Solving Session:

- **Common Image Processing Tasks:**
  - Engage in a problem-solving session focused on common challenges encountered in image processing tasks.
  - **Scenario-Based Problems:** Solve scenarios where you must choose and apply appropriate image processing techniques.

Assignment:

- **Implementing Image Transformations and Filtering:**
  - Choose a set of images and apply the techniques you've learned, including scaling, rotation, blurring, and edge detection.
  - **Documentation:** Document the steps taken, and the results achieved in a report.

Lab Work Submission:

- **Submitting Processed Images:**
  - Submit the processed images along with your code and documentation to your GitHub repository.
  - Ensure that your repository is well-organized and that all files are correctly labeled and documented.

Submission Instruction:

- Create Folder under the Github Repository of the subject.
- **Submission Format:**
  - Upload your processed images, code, and documentation to the GitHub repository.
  - Ensure all content is well-organized and clearly labeled.
- **Filename Format:** [SECTION-BERNARDINO-MP2] 4D-BERNARDINO-MP2
- **Penalties:** Failure to follow these instructions will result in a 5-point deduction for incorrect filename format and a 5-point deduction per day for late submission. Cheating and plagiarism will be penalized.

Rubric for Machine Problem No. 2: Applying Image Processing Techniques

Criteria	Excellent (10 points)	Good (8 points)	Fair (5 points)	Poor (2 points)
Understanding of Image Processing Concepts	Comprehensive understanding of image processing techniques.	Good understanding with minor gaps.	Basic understanding with some inaccuracies.	Poor or incomplete understanding.
Application of Transformations and Filters	Correct and effective application of image transformations and filters.	Mostly correct with minor inaccuracies.	Basic application with significant errors.	Inaccurate or ineffective application.
Problem-Solving Ability	Effective solutions to common image processing tasks.	Adequate solutions with some errors.	Limited solutions with many errors.	Poor or incorrect solutions.
Lab Work Submission	Well-organized, clear, and complete submission.	Organized with minor issues in clarity.	Somewhat organized but lacks clarity.	Disorganized and unclear submission.