**Computer Vision-Based Application: (Semester Project)**

**Project Description:**

This semester project challenges students to design and implement a functional computer vision application that solves a real-world problem or enhances user experience through visual data analysis. The project may involve any domain such as healthcare, security, automation, education, agriculture, or environment.

Students will apply fundamental and advanced computer vision techniques including image processing, object detection, classification, and/or tracking, depending on their chosen project idea. The focus will be on end-to-end development—from concept to deployment—while documenting the process thoroughly.

**Guidelines and Scope:**

* **Project Selection:** Choose a problem where computer vision adds clear value (e.g., face recognition, gesture control, defect detection, smart attendance, traffic monitoring, etc.).
* **Data Acquisition:** Use publicly available datasets.
* **Modeling:** Apply relevant techniques such as CNNs, edge detection, segmentation, feature extraction, etc.
* **Evaluation:** Measure performance using suitable metrics (accuracy, precision, recall, F1-score, etc.).
* **Deployment:** Implement a working demo using tools like Streamlit, OpenCV, Flask, or a basic GUI.

**Technology Stack (Suggested):**

* **Languages:** Python
* **Libraries:** OpenCV, TensorFlow/Keras or PyTorch, scikit-learn, NumPy
* **Tools:** Jupyter Notebook, Google Colab, Streamlit, Flask

**Deliverables:**

* Working prototype/demo of the computer vision system.
* Codebase with proper structure and documentation.
* Final project report detailing problem, methodology, results, and future work.

**Submission Guidelines**

A project is submitted by group of maximum of 4 students. The submission deadline is until last final exam day. This project carries 5% weightage in overall computer vision lab evaluation.