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VII Semester

**18CSC402 Deep Learning**

**Title**: CCTV-VIDEO OPTIMISATION

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* **Problem statement:** To optimize CCTV video storage by identifying frames where no humans are detected and removing those frames to save space.
* **Objective:** To develop a deep learning-based solution that detects the presence of humans in CCTV footage and selectively saves only frames with detected humans, reducing storage requirements while maintaining video relevance.
* **Dataset description:**

**Dataset**: Images of CCTV frames with two categories—human detected (1) and no human detected (0).

**Image size**: 128x128 pixels.

**Training/Testing split**: 80% of the data for training, 20% for testing.

* **Techniques:**

**Data Preprocessing**: Image resizing, normalization, and augmentation.

**Model Architecture**: Convolutional Neural Network (CNN) with multiple layers, batch normalization, dropout for regularization, and the sigmoid activation function for binary classification.

**Loss Function**: Binary Cross entropy.

**Optimization**: Adam optimizer with callbacks such as early stopping and learning rate reduction on plateau.

**Evaluation**: Accuracy and loss metrics on test data.

**Real-time Testing**: Capturing frames from live video, processing through the model, and saving frames where a human is detected.

* **Outcomes/Inferences:** The model achieved an accuracy of **78.37%** with the training data. We Successfully optimized the video storage by saving only frames with humans. The model can be applied in real-time to analyse video streams and selectively store frames, improving storage efficiency for surveillance systems.
* **Individual Contribution:** Designed the core idea and approach for optimizing cctv-video storage. Also managed the preprocessing and integration of a new unknown dataset to assess model quality, fitting this data into the model and finetuning the prediction accuracy and to ensure the highest level of video optimization.