**Assignment No: 5**

**Problem Statement:**

Implement text identification using OpenCV, Tesseract (OCR), and a deep neural network.

**Theory:**

Optical Character Recognition (OCR) is the process of detecting and extracting text from images. Tesseract is a widely used OCR engine, while OpenCV assists with image preprocessing to enhance OCR performance. A deep neural network can further improve accuracy or help identify specific patterns within the extracted text.

**Methodology:**

1. Image Preprocessing:
   * Use OpenCV to preprocess images by applying techniques like binarization, noise reduction, and edge detection to make them more suitable for OCR.
   * Methods such as Gaussian blur or thresholding can be used to boost OCR accuracy.
2. Text Extraction:
   * Apply Tesseract OCR to extract text from the preprocessed images.
   * If necessary, train a deep neural network to recognize additional patterns or to filter the extracted text.
3. Post-Processing:
   * Use language models or predefined rules to correct errors and refine the extracted text.
4. Applications:
   * This technique can be used in various applications such as automatic number plate recognition (ANPR), document digitization, and form processing.

**Conclusion:**

We successfully implemented a text identification system using OpenCV for image preprocessing and Tesseract for OCR, achieving high accuracy in extracting text from images.

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