

DIGITAL SIGNAL PROCESSING
LAB MINI-PROJECT
HAND GESTURE RECOGNITION
SYSTEM USING ALEXNET AND
MATLAB

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ABSTRACT

With this project, we are developing a system which identifies the number of fingers shown in a live webcam feed using MATLAB.

We are going to use **Deep-learning** (ie. Transfer Learning) to do the feature extraction from multiple testing images

We are going to use **AlexNet** as the deep learning model for this project.

The system mainly consists of two main stages:

- **Data acquisition/training of the model**
- **Gesture recognition/testing of the model**

In the first stage, the system captures image data from a live webcam feed and saves around 300 images to train the deep learning model.

After the training stage, we test the model by showing gestures in a specific area of the webcam feed where the user shows a certain gesture.

The name of the gesture shown by the user is then displayed as the title of the webcam feed to tell the user which gesture is being shown.

This project is an application of both Digital Image Processing as well as Digital Video Processing and is very useful in fields like robotics and in human-computer interactions.