Object Detection using Deep Learning with Raspberry Pi 4

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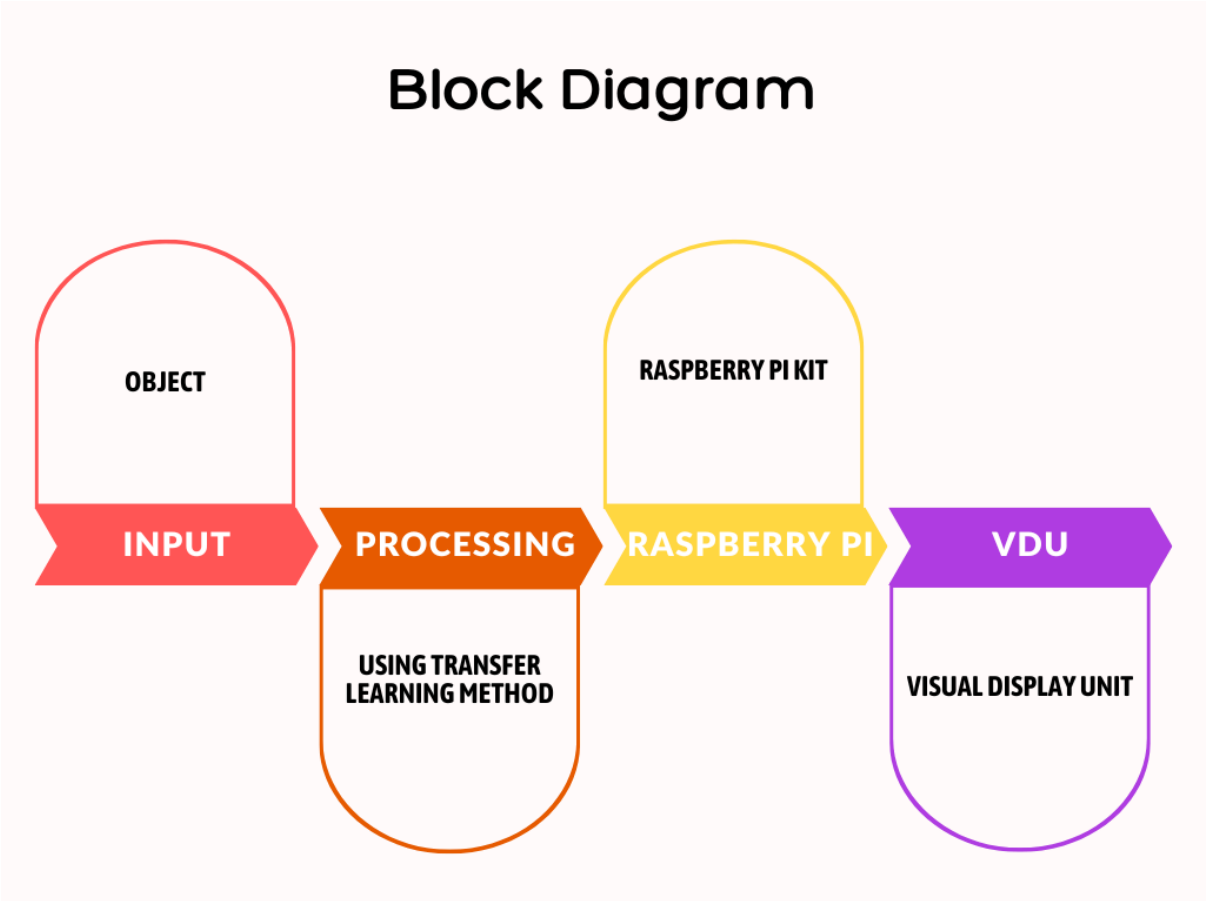
Problem Statement:

Develop an efficient object detection system utilizing transfer learning on real environment images, integrated with Raspberry Pi 4 for applications in home security and defect detection, encompassing recognition of various objects and human faces

Solution:

Utilizing deep learning models, particularly transfer learning, integrated with Raspberry Pi 4, we develop an object detection system trained on real environment images. This system serves for home security and object detection. It is verified for recognition of various objects and human faces, thus validating its versatility and practical application. The computation is performed on Python environment, ensuring compatibility and ease of development.



Software and Technology Used:

Hardware: Raspberry Pi 4 is used for communication

Machine Learning: OpenCV, Matplotlib, NumPy, and the Mediapipe framework for tasks like object detection . While OpenCV, Matplotlib, and NumPy are more focused on image processing and numerical computing tasks.

Deep Learning: EfficientDet-Lite2 model: A specific deep learning architecture used for object detection tasks.

Hardware:

Input:

Output: