**OBJECT RECOGNITION USING SURF ALGORITHM**

**ABSTRACT**

Object recognition, as the name implies, is the process of identifying and determining a specified object in a digital image or in a video. This is the central research topic in Computer Vision. Computer Vision is a field that includes methods for acquiring, processing, analyzing, and understanding a single image or a sequence of images from the real world in order to produce numerical or symbolic information.

Computers are unbeatable at processing speeds and at finding the best solutions for many complex problems, multi-tasking various processes, etc. But a computer cannot think. It cannot see the world in the way we see it. A computer cannot understand the environment it is in, unless directed and specified by humans.

This project is an attempt to bring about a change in how a computer sees the world, sees the objects in it. OpenCV has been used for this project. OpenCV is the acronym of Open source Computer Vision. It has a huge collection of programming functions and libraries aimed to improve the vision of the computer. Among these, libraries for keypoint localization, keypoint descriptor, and keypoint matching have been used. SURF (Speeded Up Robust Features) algorithm is used for keypoint localization and keypoint descriptor. Brute Force Matcher is used for matching the keypoints. A query image of an object is taken as an input from the user. The keypoints and descriptors are extracted from the query image and are compared with the already extracted keypoints and descriptors of objects images located in the dataset. If enough number of good matches are found, then the name of the object is displayed.

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