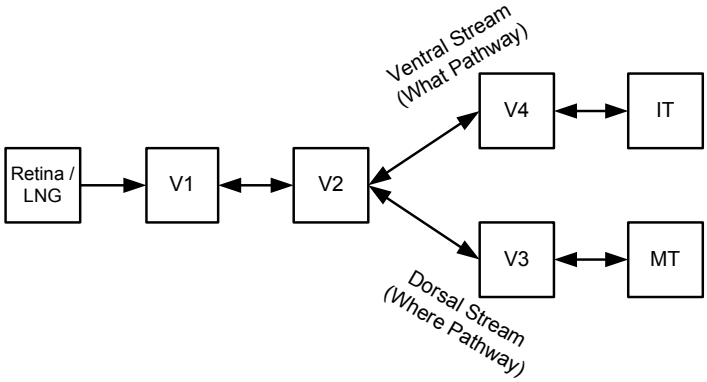

Fig. 2. The organization of the ventral Stream of visual cortex

The visual cortex areas in the ventral stream (what pathway) that is associated with object recognition are [7]:

- *Area V1:* Consists of selective spatiotemporal filters, which process the spatial frequency, orientation, motion, direction, speed, and other features.
- *Area V2:* function is similar to V1; however V2 neurons' responses are adjusted by more complex properties such as the orientation of false contours.
- *Area V4:* Part of the ventral stream. V4 is adjusted for orientation, spatial frequency, color and object features of intermediate complexity.
- *Inferior Temporal Cortex (IT):* an area in the brain that is responsible on object representation in both human and monkey [8].

2 Background

Achieving accurate results in object recognition systems has been a problem for both computer vision and biological vision. Although there are so many techniques that have been developed, yet, both computer vision and biological vision are still looking into building systems that can produce better results of object recognition. In this section computer vision, biological vision and different algorithms / techniques that have been developed to achieve object recognition are discussed.

2.1 Computer Vision

The main aim of computer vision is developing an intelligent application that can perceive the world around us. Many algorithms have been developed that can achieve object recognition such as principle component analysis (PCA) that was proven to perform well in recognizing objects such as faces [10].

In computer vision, a system will start by extracting features from the input image. This will help the classifier to decide on whether or not the intended object is in the scene. Many feature extraction algorithm are available such as Haar-Like feature extraction algorithm [11] and Gabor filters [12].