## MPEG Block Matching:

In the encoding of an MPEG video, each image frame is not compressed, but rather the differences between the adjacent image frames, which is calculated using an algorithm known as the block matching. Each macro-block of size 16x16 pixels of the current frame is compared with the reference frame and a motion vector describing the probable movement of the macro-block is calculated.

Firstly, a search region is defined in the reference frame within which a macro-block of the current frame will be compared. Usually this search region is setup by extending the region of the macro-block by its width and height on both sides. In this way the search region formed is of 48x48 pixel size. Within this region, the current macro-block is exhaustively compared to every possible 16x16 pixel block. You also need to make sure that there is never a possibility of the macro-block moved out of the frame and we did not know about it.

Once completed, the smallest difference between the current block and the reference block is assumed to be where the original macro-block has moved in the next frame. The difference of the position of the original macro-block in the current frame and the position of the same macro-block in the next frame is known as the motion vector. To make certain that the movement was true, there are other tests required. You need to figure out these tests after studying the MPEG standard in detail.

This searching process is done for all the macro-blocks within the frame, which is already divided into the 16x16 pixel macro-blocks beforehand.

## Implementation Option:

One option is to implement the calculation of absolute difference between two macro-blocks in hardware while rest of the method will be implemented on CPU.