EARLY TERMINATION FOR OPTICAL FLOW REFINEMENT

TECHNICAL FIELD

The present invention relates to the field of picture processing and more particularly to optical flow refinement.

BACKGROUND

Video coding (video encoding and decoding) is used in a wide range of digital video applications, for example broadcast digital TV, video transmission over internet and mobile networks, real-time conversational applications such as video chat, video conferencing, DVD and Blu-ray discs, video content acquisition and editing systems, and camcorders of security applications.

The amount of video data needed to depict even a relatively short video can be substantial, which may result in difficulties when the data is to be streamed or otherwise communicated across a communications network with limited bandwidth capacity. Thus, video data is generally compressed before being communicated across modern day telecommunications networks. The size of a video could also be an issue when the video is stored on a storage device because memory resources may be limited. Video compression devices often use software and/or hardware at the source to code the video data prior to transmission or storage, thereby decreasing the quantity of data needed to represent digital video images. The compressed data is then received at the destination by a video decompression device that decodes the video data. With limited network

CLAIMS

1. A method of video coding implemented in a decoding device or an encoding device, the method comprising:

obtaining initial motion vectors for a current block;

obtaining first predictions for a sample value in the current block based on the initial motion vectors;

calculating a first matching cost according to the first predictions;

determining whether an optical flow refinement process should be performed or not, according to at least one preset condition, the at least one preset condition comprising a condition of whether the calculated first matching cost is equal to or larger than a threshold;

performing an optical flow refinement process for obtaining a final inter prediction for the sample value in the current block, when it is determined that the optical flow refinement process should be performed.

2. The method of claim 1, wherein the at least one preset condition comprises the condition that the current block is allowed to be predicted by decoder-side motion vector refinement.

3. The method of claim 1 or 2, wherein it is determined that the optical flow refinement process should be performed, when it is determined that all of the at least one preset conditions are fulfilled.

4. The method of one of the preceding claims, wherein the first predictions for the sample value in the current block are obtained based on a first interpolation filter.

5. The method of claim 4, wherein the first interpolation filter is a bilinear interpolation

filter.

6. The method of one of the preceding claims, further comprising:

obtaining refined motion vectors based on the initial motion vectors and the first matching cost;

obtaining second predictions for the sample value in the current block according to the refined motion vectors; and

the performing an optical flow refinement process comprising performing the optical flow refinement based on the second predictions.

7. The method of any of the claims 1 to 6, wherein the obtaining first predictions for a sample value in the current block based on the initial motion vectors comprises: obtaining a number of pairs of candidates based on the initial motion vectors;

obtaining first predictions for a sample value in the current block based on at least one of the pairs of candidates;

and wherein

the calculating a first matching cost according to the first predictions comprises determining a matching cost for each of the pairs of candidates based on the first predictions and

determining the smallest matching cost of the determined matching costs as the first matching cost.

8. The method of claim 6 or 7, wherein the second predictions for the sample value in the current block are obtained according to a second interpolation filter.

9. The method of one of the claims 6 to 8, wherein the second interpolation filter is a 6-tap or 8-tap interpolation filter.

10. The method of one of the claims 6 to 9, wherein the
refined motion vectors are obtained according to a second matching cost.

11. The method of claim 10, wherein when a value of the second matching cost is greater than or equal to another threshold value, it is determined that the optical flow refinement process should be performed.

12. The method of one of the claims 6 to 11, wherein only when it is determined that the optical flow refinement process should not be performed, the final inter prediction is obtained by a weighted sum of the second predictions.

13. The method of one of the preceding claims, wherein the threshold value is obtained according to the size of the current block.

14. The method of one of the preceding claims, wherein the current block is a coding block or a sub-block.

15. The method of one of the preceding claims, further comprising generating an inter prediction block comprising the final inter prediction for the sample value in the current block.

16. An encoder (20) comprising processing circuitry for carrying out the method according to any one of claims 1 to 15.

17. A decoder (30) comprising processing circuitry for carrying out the method according to any one of claims 1 to 15.

18. A computer program product comprising a program code for performing the method according to any one of claims 1 to 15.