The released code for paper "Learning to Detect Video Saliency with HEVC Features" in TIP2016, from Lai Jiang, Mai Xu in Beihang University(2016).

**Software**

1. Matlab 2012 (or later)
2. Visual studio 2010 (or later)

**Usage**

**1. Encode the video.**

In paper, video is encoded by HM16.0 (HEVC) in rate control mode, with the bit-rates of the same as those at fixed QP=37. However, any public encoder with different settings can be applied to extract the compressed domain features. Here, we give two examples.

* **HM16.0 (HEVC)**

Videos can be encoded in the HECV format by HM16.0, which can be downloaded in https://hevc.hhi.fraunhofer.de/svn/svn\_HEVCSoftware/tags/. The video is first encoded in fixed QP mode to obtain the corresponding bit-rates. Then, video is encoded in rate control mode to generate the final bit stream file (.bin).

1. Transform the video to YUV format (if not). Run **trans2yuv.bat.**
2. Move the yuv file to .\HM16.0\_fixqp\bin\vc10\Win32\Debug\.
3. Modify .\HM16.0\_fixqp\bin\vc10\Win32\Debug\**VideoInfo.cfg** according to your video information.
4. Modify .\HM16.0\_fixqp\bin\vc10\Win32\Debug\**encoder\_lowdelay\_P\_main.cfg,** mainly in **Quantization\_QP**=X (37 is recommended), **Rate** **Control\_RateControl**=0.
5. Run the project in .\HM16.0\_fixqp\build\**HM\_vc10.sln**. Record the bit-rates in the screen when the project is finished.
6. Modify .\HM16.0\_fixqp\bin\vc10\Win32\Debug\**encoder\_lowdelay\_P\_main.cfg**, mainly in, **Rate** **Control\_RateControl**=1, **Rate** **Control\_RateControl=** **TargetBitrate**=X (the recorded bit-rates).
7. Run the project in .\HM16.0\_fixqp\build\**HM\_vc10.sln** again. The bit stream file **str.bin** is in *.\HM16.0\_fixqp\bin\vc10\Win32\Debug\.*

* **ffmpeg (X265)**

Transcode the video to bit stream file (.hevc) by the x265 encoder in ffmpeg3.2.2, with QP set to 37.

**Run x265encode.bat**

**2.Feature extraction&Generate the saliency map**

* **Normal version (in paper)**

1. Mex the cpp file in matlab: **Mex computecontrast5.cpp**
2. Run **Main.m** (modify the input/output on your own)

* **Fast version**

1. Move the bit stream file (str.bin) to .\HM\_16.0\_features\bin\vc10.
2. Modify the video information in **TLibDecoder\_ TDecCu.h** and **TLibDecoder\_TDecGop.cpp**
3. Link your OpenCV
4. Run the project in .\HM\_16.0\_features\build\**HM\_vc10.sln (Release X64 default)**

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