* Fire hydrant detection and cropping using deep learning

1. Open the folder “source code”
2. Put the input video to the subfolder “input\_video”
3. Run the code by the command “python main.py” (should build TensorFlow environment first)
4. Wait for the program to finish, and get the result images and videos in subfolder “test\_result”

* 3D – modeling using VisualSFM

Official introduction and manual of VisualSFM: <http://ccwu.me/vsfm/index.html>

1. Decompress “VisualSFM\_windows\_64bit (integrated).zip”
2. Open it and click “VisualSFM.exe”
3. Please refer to official guidance for software usage details

<http://ccwu.me/vsfm/doc.html#usage>

* Software lists:

1. VisualSFM
   * + Website: <http://ccwu.me/vsfm/index.html>
     + Manual: <http://ccwu.me/vsfm/doc.html#usage>
2. OpenMVG

OpenMVG is a general framework to make multiple view models, especially make 3D reconstruction. When results from OpenMVG are output, and then a complete three-dimensional reconstruction can be achieved through dense matching, surface reconstruction, and texture mapping.

* + - Website: <https://github.com/openMVG/openMVG>
    - Manual: <https://openmvg.readthedocs.io/en/latest/openMVG/openMVG/>
    - Download: <https://github.com/openMVG/openMVG/releases/tag/v1.6>

1. Meshroom

Meshroom is a free, open-source 3D Reconstruction Software based on the AliceVision framework.

* + - Website: <https://alicevision.org/>
    - Manual: <https://meshroom-manual.readthedocs.io/en/latest/>
    - Download: <https://alicevision.org/#meshroom>

1. Meshlab

Meshlab is a open source system for processing and editing 3D triangular meshes.

* + - Website: <https://www.meshlab.net/>
    - Manual: <http://www.heritagedoc.pt/doc/Meshlab_Tutorial_iitd.pdf>
    - Download: <https://github.com/cnr-isti-vclab/meshlab/releases>
* Results images:

Open the folder "Results", the detected and cropped images are located in the folder "images" of each subfolder.

* Results videos:

Open the folder “Videos”, decompress demo1.zip.001 and demo2.zip.001