

Supplementary Files

The codes and sample datasets for tracking using a PTZ camera are downloadable from:
<http://www.people.vcu.edu/~ymotai/Tracking.zip>

This project file computes optical flow and SIFT feature points for tracking a target appearing on the screen. The folder consists of the following header and source files:

Header files:

Httpget.h

Usage - defines *httpget* function which executes HTTP GET requests
The host and port are statically stored upon first call and is ignored on subsequent ones

Imgfeatures.h

Usage- defines functions and structures for dealing with SIFT image features

Jpegtoipl.h

Usage- defines the function *jpegtiopl* which converts JPEG to IPL

kalman.h

Usage- defines functions for kalman filter prediction (invoked in process).
Those functions initializes (and deinitializes) data structures for use in kalman filter

kdtree.h

Usage- defines functions and structures for maintaining a k-d tree database of image features.

For more information, refer to:

Beis, J. S. and Lowe, D. G. Shape indexing using approximate nearest-neighbor search in high-dimensional spaces. In *Conference on Computer Vision and Pattern Recognition (CVPR)* (2003), pp. 1000--1006.

minpq.h

Usage- defines functions and structures for implementing a minimizing priority queue.

os.h

Usage- if the WINDOWS symbol is defined assume compiler is visual studio-based, otherwise assume the compiler is gcc-based (and potentially not executing on windows)

process.h

Usage- defines function *process* which is called every time a new frame is retrieved the frame data is stored in a global called image of type *IplImage*
* NB image is released every loop iteration

sift.h

Usage- defines functions for detecting SIFT image features.

For more information, refer to:

Lowe, D. Distinctive image features from scale-invariant keypoints. *International Journal of Computer Vision*, 60, 2 (2004), pp.91--110.

stdafx.h

Usage- an include file for standard system include files, or project specific include files that are used frequently, but are changed infrequently

target.h

Usage- defines functions to set and reset a target on the screen and draw a box surrounding the target

utils.h

Usage- Miscellaneous utility functions for SIFT tracker

webview.h

Usage- defines functions that deal with the camera server such as opening and closing the camera server, getting live images, operate the camera, etc.

xform.h

Usage- Functions for computing transforms from image feature correspondences captured using SIFT tracker.

Source files:

Httpget.c

Usage- executes HTTP GET requests. The host and port are statically stored upon first call and is ignored on subsequent ones

Imgfeatures.c

Usage- functions and structures are used for dealing with SIFT image features

Jpegtoipl.c

Usage- *jpegtiopl* which converts JPEG to IPL

kalman.c

Usage- functions for kalman filter prediction (invoked in process). Those functions initializes (and deinitializes) data structures for use in kalman filter

kdtree.c

Usage- Functions and structures for maintaining a k-d tree database of image features. For more information, refer to:

Beis, J. S. and Lowe, D. G. Shape indexing using approximate nearest-neighbor search in high-dimensional spaces. In *Conference on Computer Vision and Pattern Recognition (CVPR)* (2003), pp. 1000--1006.

minpq.c

Usage- Functions and structures for implementing a minimizing priority queue to be used in SIFT tracker.

opticalflow.cpp

Usage- it is the entry point for the console application.

process.c

Usage- *process* function is called every time a new frame is retrieved the frame data is stored in a global called image of type `IplImage *`

NB image is released every loop iteration

sift.c

Usage- Functions for detecting SIFT image features.

For more information, refer to:

Lowe, D. Distinctive image features from scale-invariant keypoints. *International Journal of Computer Vision*, 60, 2 (2004), pp.91--110.

stdafx.cpp

Usage- source file that includes just the standard includes
opticalflow.pch will be the pre-compiled header
stdafx.obj will contain the pre-compiled type information

target.c

Usage- functions to set and reset a target on the screen and draw a box surrounding the target

utils.c

Usage- Miscellaneous utility functions for SIFT tracker.

webview.c

Usage- functions deal with the camera server such as opening and closing the camera server, getting live images, operate the camera, etc.

xform.c

Usage- functions to compute transforms from image feature correspondences for SIFT tracker.