WinCMT

[DOCUMENTATION] CMT-THREADED-ON-WINDOWS

Output Panel
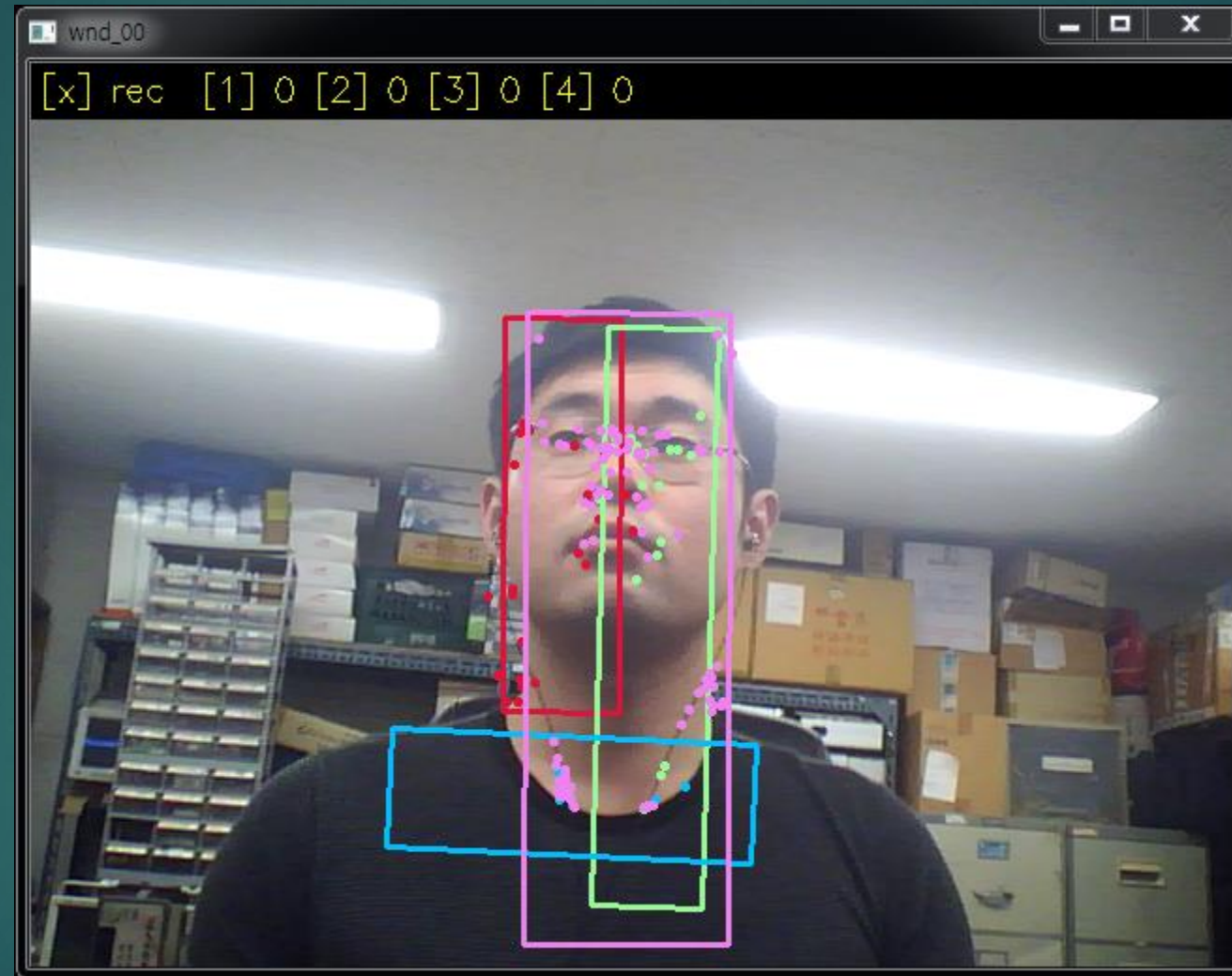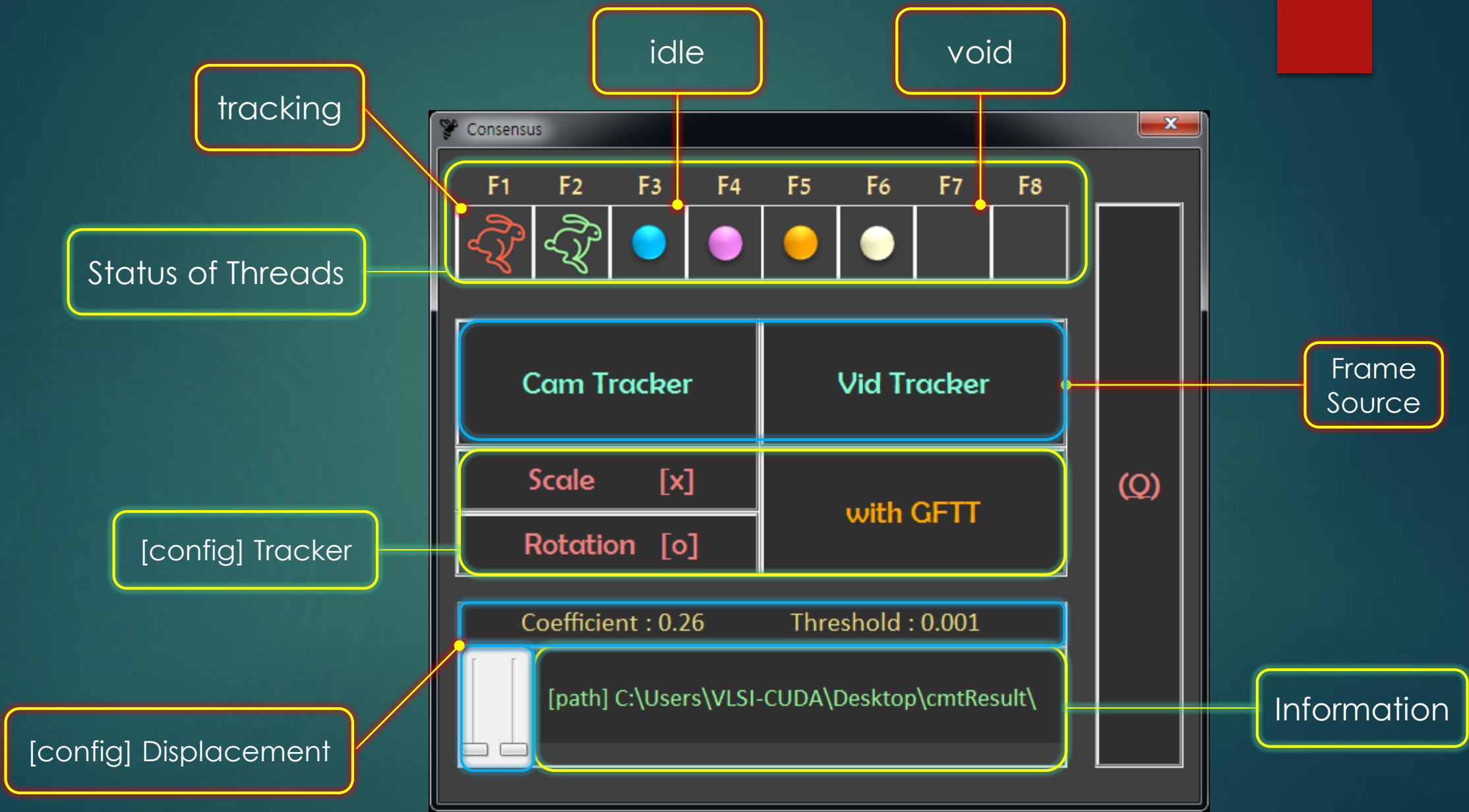
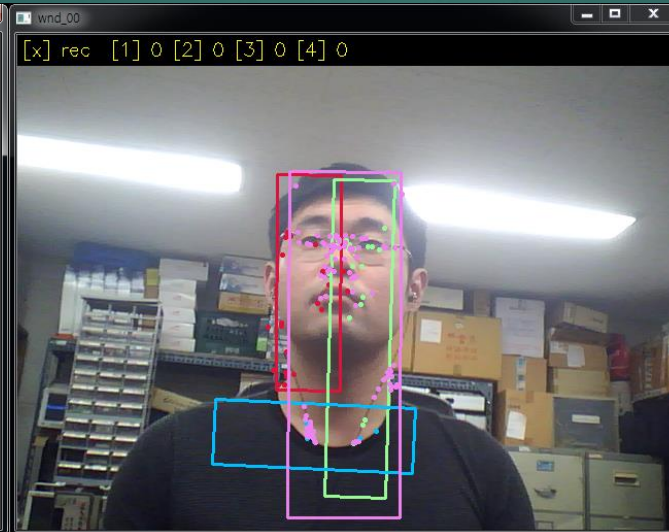# Control Panel

1. How to use in brief
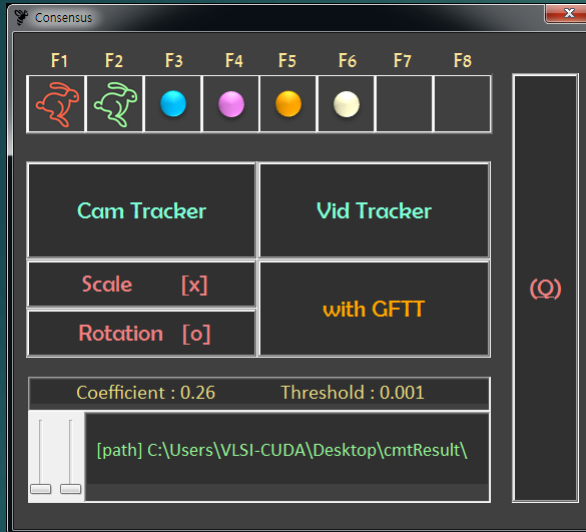
Control Panel   Output Panel

▶ Shortkeys are designed to work @ Output Panel's focus

▶ to Envoke threads   >> Functions keys { F1, F2, …, F8 }

▶ to Set the objects   >> Number keys   { 1, 2, ..., 8 }

▶ to Preview the Detected corners   >> SpaceBar

▶ to Terminate current session or program itself   >> Q

▶ to Save your video   >> C

2. Frame source Selection

- WinCMT can work on,
  1) Webcam connected to your Desktop
  2) Video file from any folder (*.mp4, *.avi)

To initiate the tracking session first,

Press "Cam Tracker" or "Vid Tracker".

The output panel will Pop-up and start to show Preview.

For "Vid Tracker", file dialog shows up first.

3. Dynamic Tracker Generation

▶ To accelerate the feature of

"Long term model free Object Tracking",

You might choose the object to track at run time

by Construct & Desturct Tracker threads

Construction & Desturction of Tracker threads are

done by pressing Functions keys { F1, F2, …, F8 }

Colored burbles per Fn will be made and deleted.

4. Dynamic Object Initialization

▶ To determine the Area of the object to track,

Press Number keys { 1, 2, ..., 8 }.
The frame will be temporarily paused, and
you shall choose the object's area with Mouse Drag.

Because the initialization for a tracker thread is done,
the status of it will show Running Rabbit with initiated tracking.

As like you are able to dynamically warp Threads, also you might
re-initialize the object's area at runtime by pressing Number keys.

5. Configurate Tracker (1)

▶ CMT is featured with the ability to track Deformable objects.

Objects in real world always can deform with 6-DOF.

Though we currently cannot presume the backside of an object,

any changes of a planar feature-set in Scale, and Rotation

can be assessed with CMT.

To control this features, press "Scale" and "Rotation" button @ runtime.

5. Configurate Tracker (2)

▶ The fundamental modules (Detector, Descriptor, Matcher, Tracker) are actually important and you shall be interested in them for your research. Also, certain underlying modules could perform better or worse depending on tracking environment or constraints.

WinCMT is currently supporting 2 kinds of Detectors for the reasons above. Press "with ~" button to select the detector module inside. And you can anticipate better detector by pressing SpaceBar when no threads are activate to track. (thread's status : void >> idle >> active)

6. Save result Video

▶ Start, and Stop saving your Video @ runtime

Pressing C at Keyboard, the Saving Operation will be toggled.
This means that you might easily acquire multiple videos on a single session.
>> check the Surtitle on Output panel.

The path is automatically determined as Desktop of the user logged-on.
As like "C:\Users*user*\Desktop\cmtResult".

The output format is ~.avi with MPEG format, and will have the name
as "Time-code" to distinguish each to others.

7. Configurate Displacement

▶ This implementation was originally inspired to calculate

the Active Mass of Animals with Computer Vision Tracking.

On the surtitle of the output panel, it shows the status of the record, and the accumulated displacements of the tracked objects.

Displacement information is recorded within ~.txt document at the same path of video output. Currently, this writing text is automatic and not optional.

To determine "the multiplication coefficient to the norm of the center displacement" and "drop-out threshold for mere changes", use Slider @ runtime.

Bug Report

When the object is not visible because of the occlusion or moved-out from source frame, we would understand that the number of the tracked points will be '0' and also the assumption for object's center will be located outside the frame.

For those kind of failures, I have defined the internal functions to report its success on return. And on its failure, each Thread running CMT module acknowledges this and reinitializes its own CMT with the first acquired feature-set.

Although this effort, heap error occurs sometimes on failure of tracking. This is assumed to be caused from fastcluster module at the moment.