Tobii API 1

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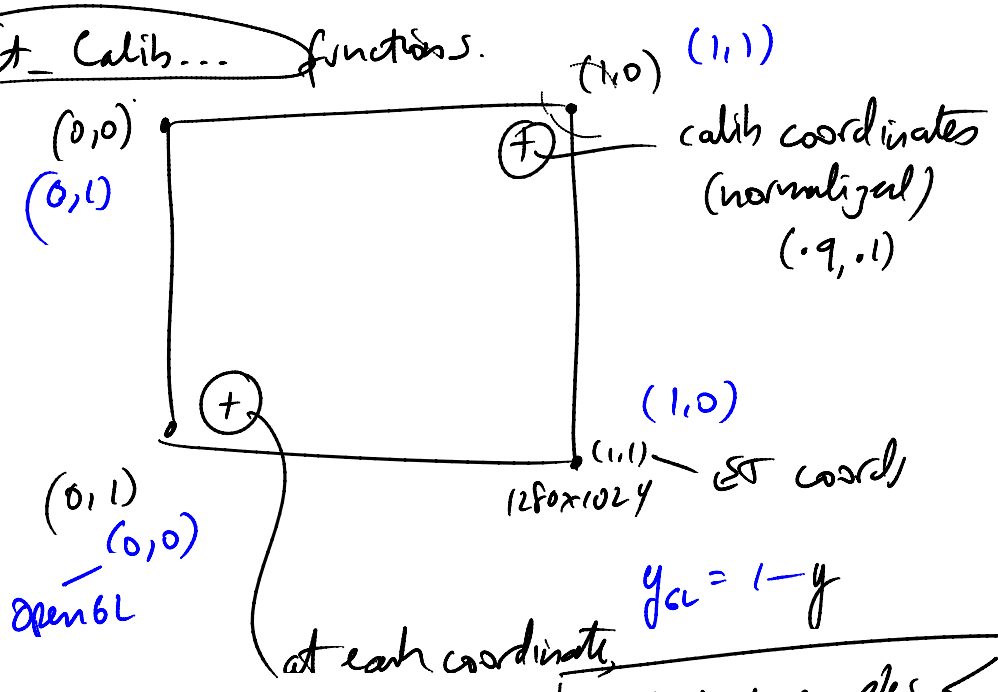
Tet_Calib... functions.



$y_{GL} = 1 - y$

at each coordinate,

ET samples : total # of samples < 200

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Tet_CalibClear(void):
call this once prior to calibration
removes all calib data on server

for each calibration point:
Tet_CalibAddPoint(float x, float y,
ulong nofdat // (# of samples)

gazeDataReceiver ← Tet_Callbackfunction func,
void* pAddData — NULL ok
ulong interval)
└ 0 ok

use: 2,5,9
number of calib points
e.g. ⇒ no samples = 200/5
= 40 per calib point

this many slow ET down a lot
can be less, e.g. 16.

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Test_CalibsCalculateAndSet()
— tells ET no more calibs pkts coming
(end of calibration)

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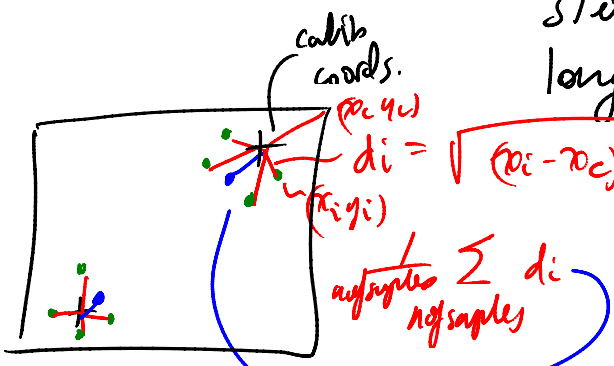
basic calibs ↑

Test_CalibsLoadFromFile(char *pfile)
Test_CalibsSaveToFile(char *pfile)

where is this?
disk (local file)
or xl server (remote copy)

Tet_CalibsGetResult (char * pfile,
sTet_CalibsAnalyzeData * pData,
long * pLen)

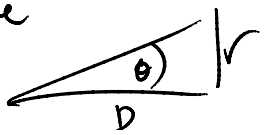


$d_i = \sqrt{(x_i - x_c)^2 + (y_i - y_c)^2}$

$\frac{1}{\text{nofsamples}} \sum d_i = \text{error}_c$ (local error, local to calib pt)

$\frac{1}{C} \sum \text{error}_c$ } "global" average error (averaged over all points)

} in normalized pixel coords — need to convert this to visual angle



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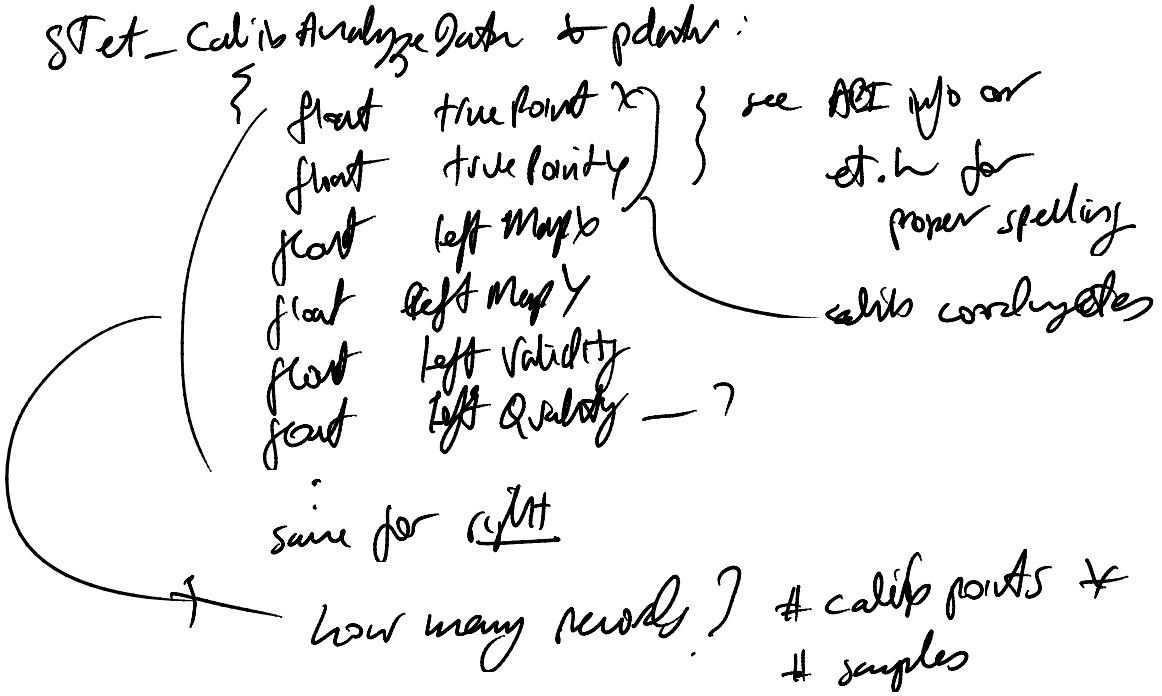

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A simple GLUT example

↳ simple windowing GUI on top of OpenGL

does a window
has popup menus
& some GUI event
callbacks (mouse, kbd
events)

(C) graphics API
— OpenGL is independent
of any windowing lib.

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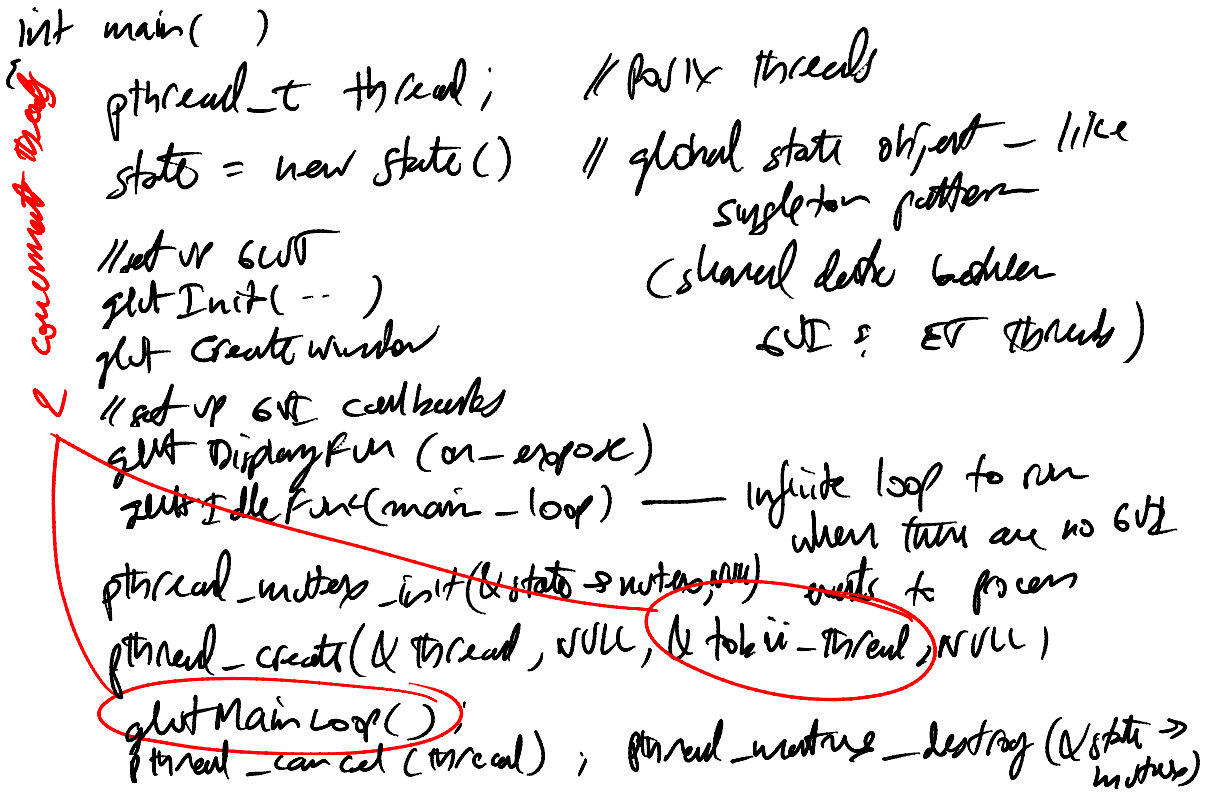

```
main_loop( )
{
    // clear screen
    ...
    // view transformation — gluOrtho2D(w,h)
    // object transformation — glLoadIdentity()
    if (state->status.connected) {
        if(state->status.calibrating && state->status.calibstarted)
            // block until their thread advances to new cpoint
            // once unblocked by signal ET thread, draw
            // dot at (xay) coordinates
            // signal their thread to advance to next point
    } else if (state->status.running) {
            draw_point(state->x, state->y)      average of (x1,y1),(x2,y2)
    glutSwapBuffers()
```

```
fobii_thread( )
{
  pthread_setcancelstate(PTHREAD_CANCEL_ENABLE, NULL)
  pthread_setcanceltype(PTHREAD_CANCEL_ASYNCHRONOUS, NULL)
  Test_Init();
  while(!state->
    if(!state->status.thisfield)
      if(!state->status.connected)
        fobii_connect();
    else {
      if(--calibrating)
        fobii_calibrate()
      else if(running)
        fobii_run()
      else if(document) fobii_document()
```

MAKE SURE ALL Test_ CALLS ARE DONE ON THE THREAD — CAN IT "go outside"

user initiates action via GUI event (drop-down menu)

Test_start()

Test_Step()

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```
tobii_calibrate()
{
  if( ! calibstarted ) {
        Tet_CalibClear()
        pthread_mutex_lock(&state->mutex)
        state->state.calibstarted = 1;
        pthread_mutex_unlock(&state->mutex)
  }
  if (calibstarted) {
        // signal gui thread to draw point
        Tet_CalibAddPoint(x, y, samples, gazePathSequencer, NULL, 0)
        // block for GUI to finish drawing
        // advance to next calib coordinates
    if (last calib point) { Tet_CalibCalculateAndSet()
```