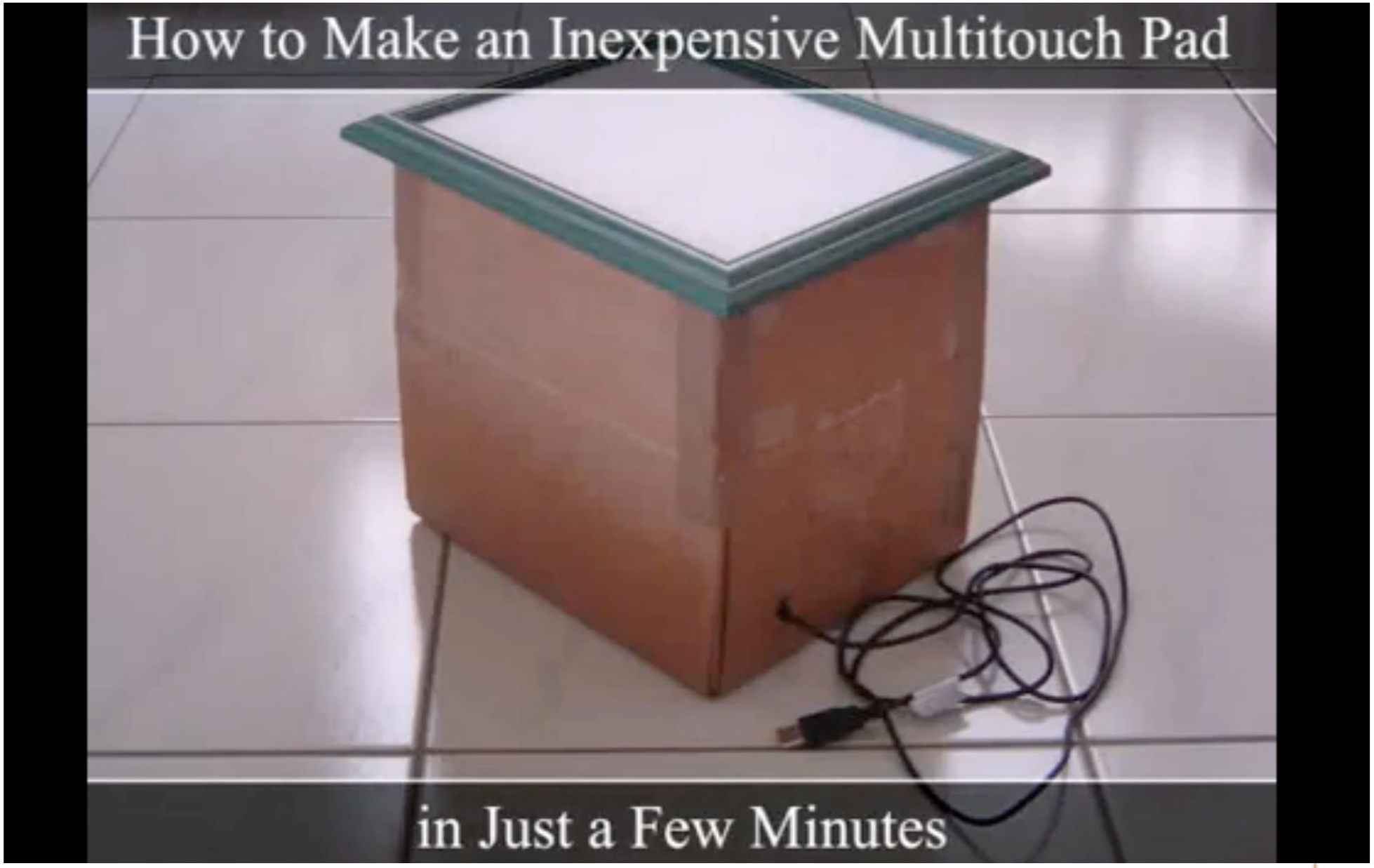
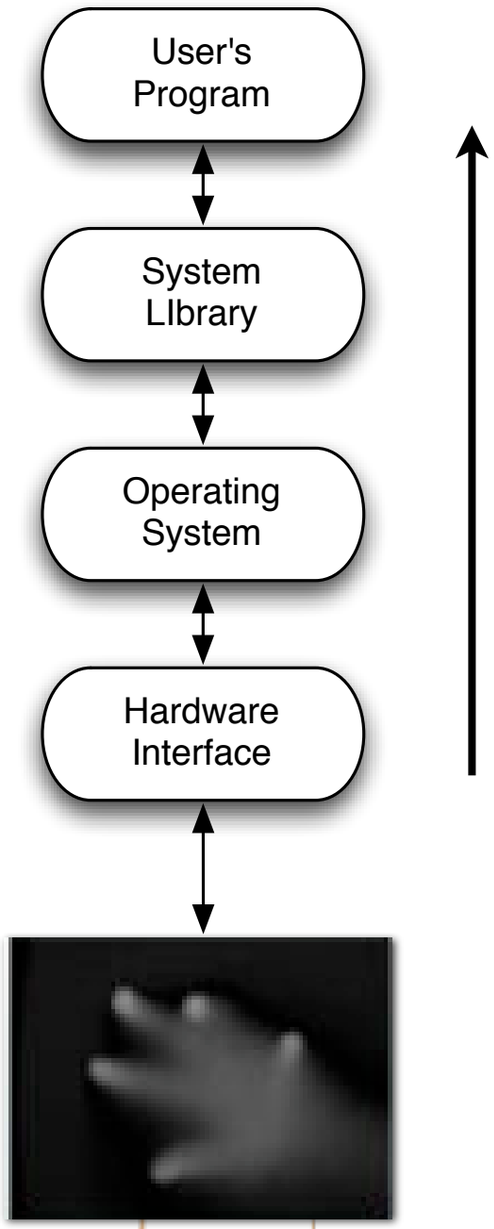
User Interaction: Intro to Multi-Touch

Associate Professor Donald J. Patterson
INF 133 Fall 2013

Getting Multi-Touch up and Running

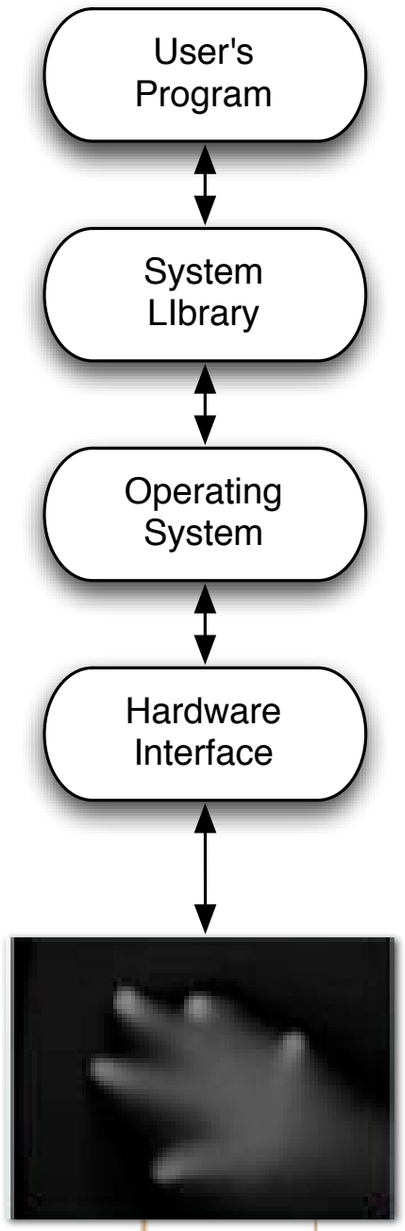


Flash notes



- I had very inconsistent behavior using the Flash stack
- Regardless of Flash security settings I could not get things to work:
  - In Flash Player
  - In a browser
- I could get everything to work consistently using the full Flash program
  - Running flosc-2_0_5.jar on the command line
    - java -jar ./flosc-2_0_5.jar 3333 3000
- Having CCV send output via OSC

Things you have to worry about



- Is your operating system 32-bit or 64-bit?
  - Your java virtual machine should match
- What Java version are you running?
  - Most recent is 1.7
  - MT4J on a Mac needs Java 1.6 JRE in Eclipse
- On Mac you have to make CCV executable
- Download flosc for demoing here
  - https://code.google.com/p/flosc/
- Which version of CCV?
  - 1.5 for Window
  - 1.2 for Mac

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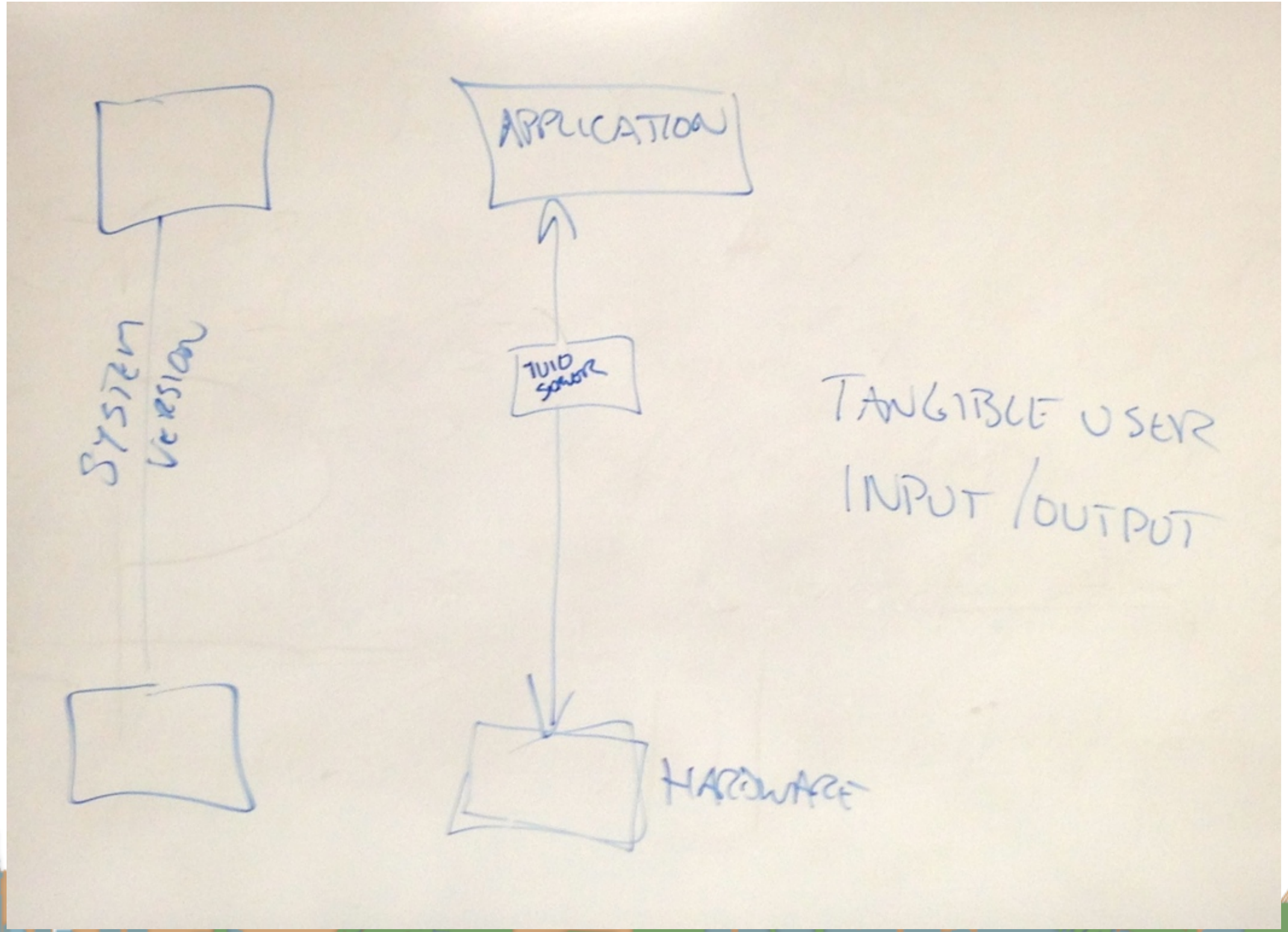

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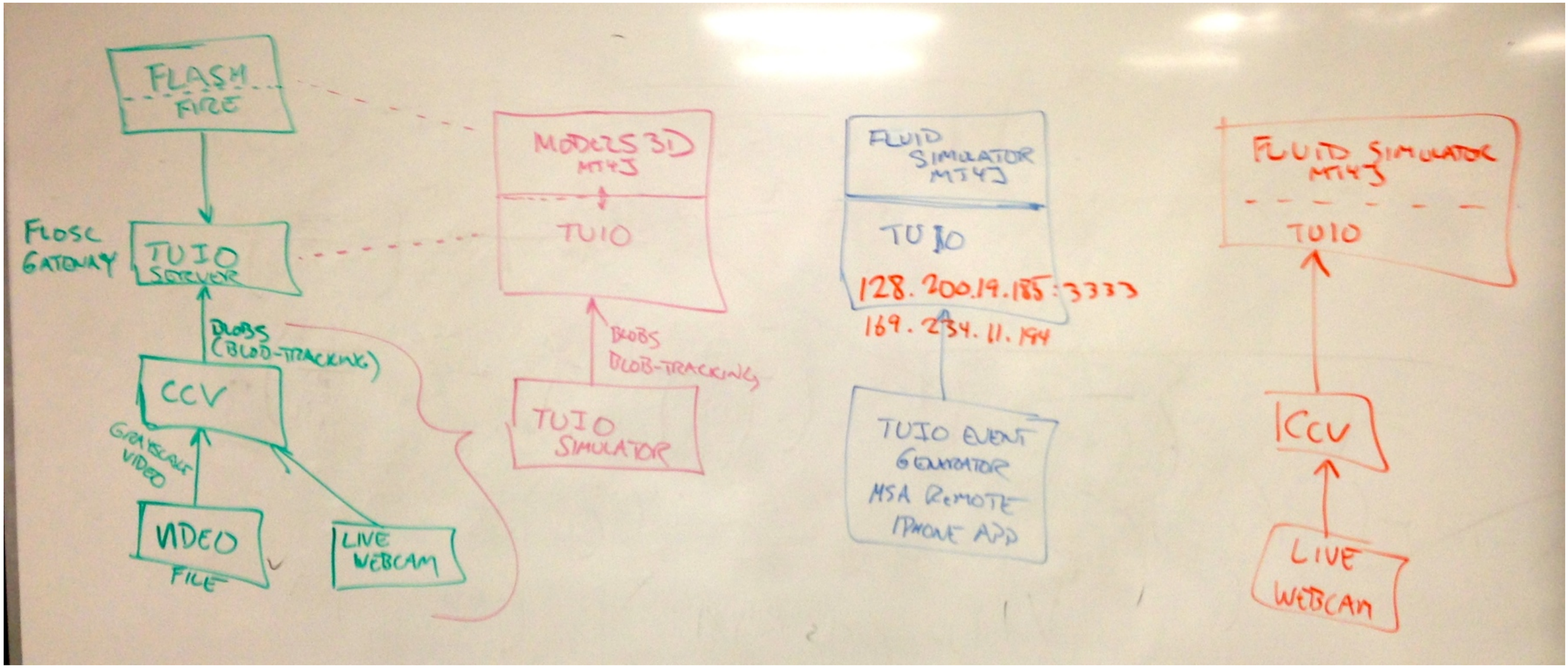

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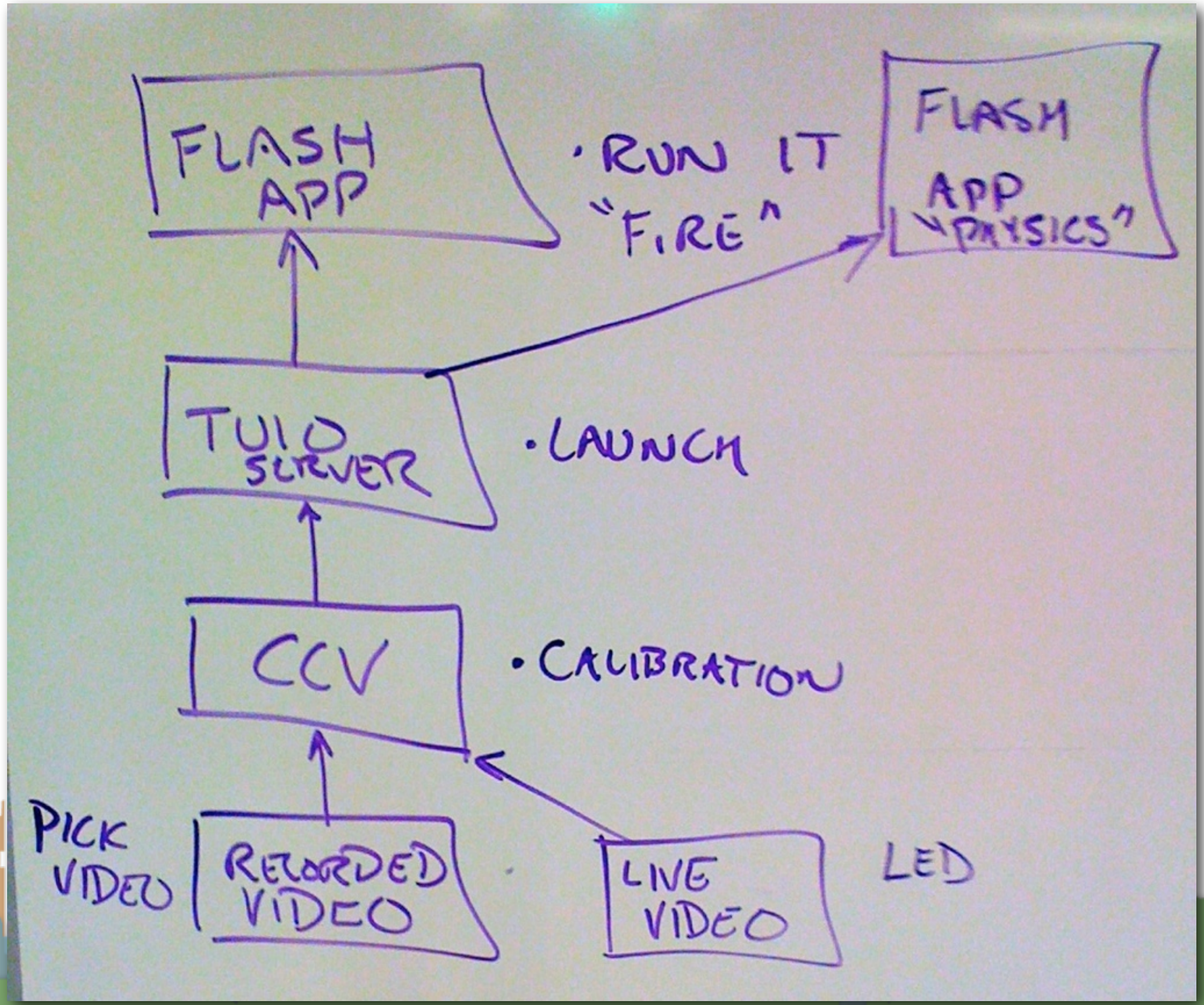

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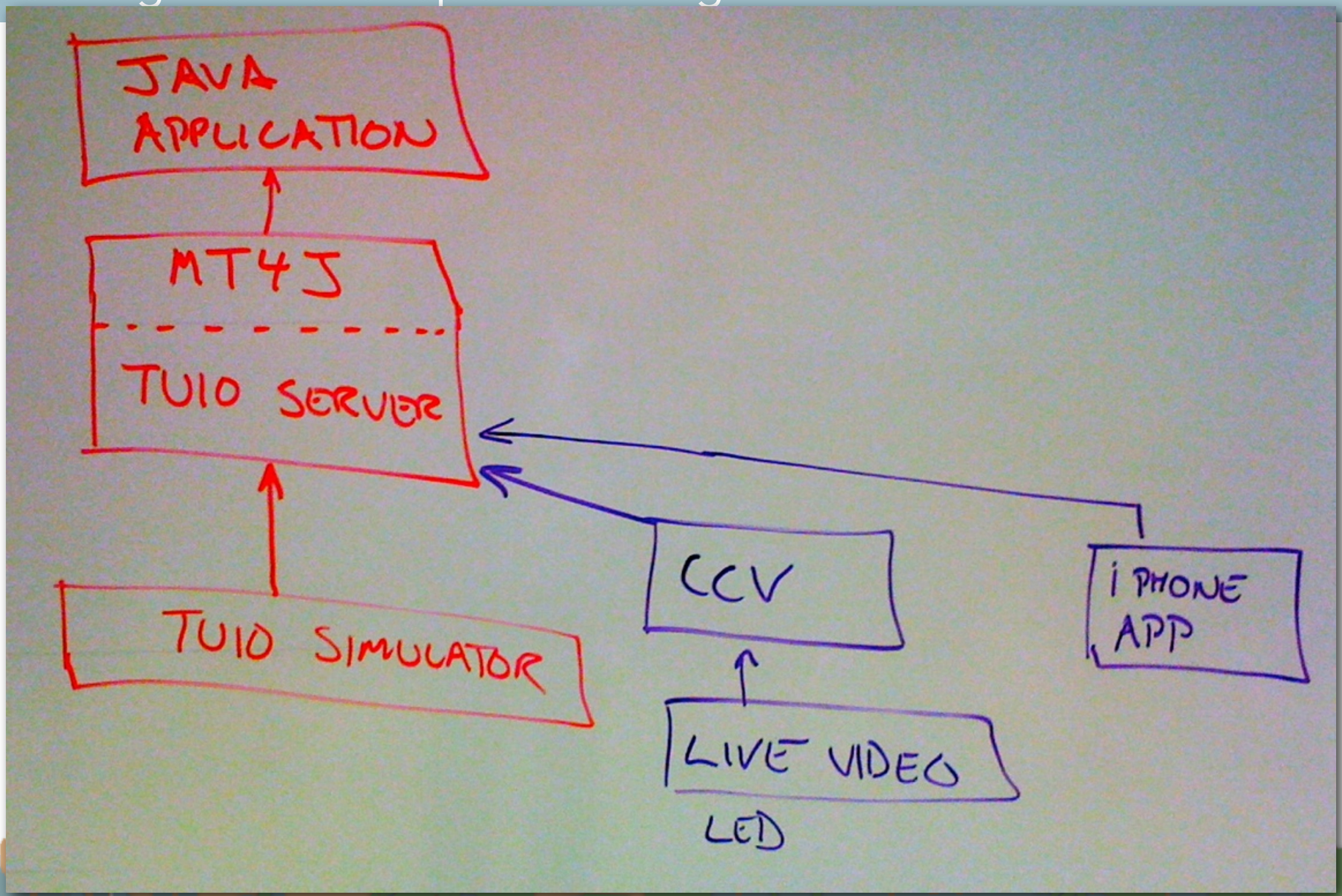

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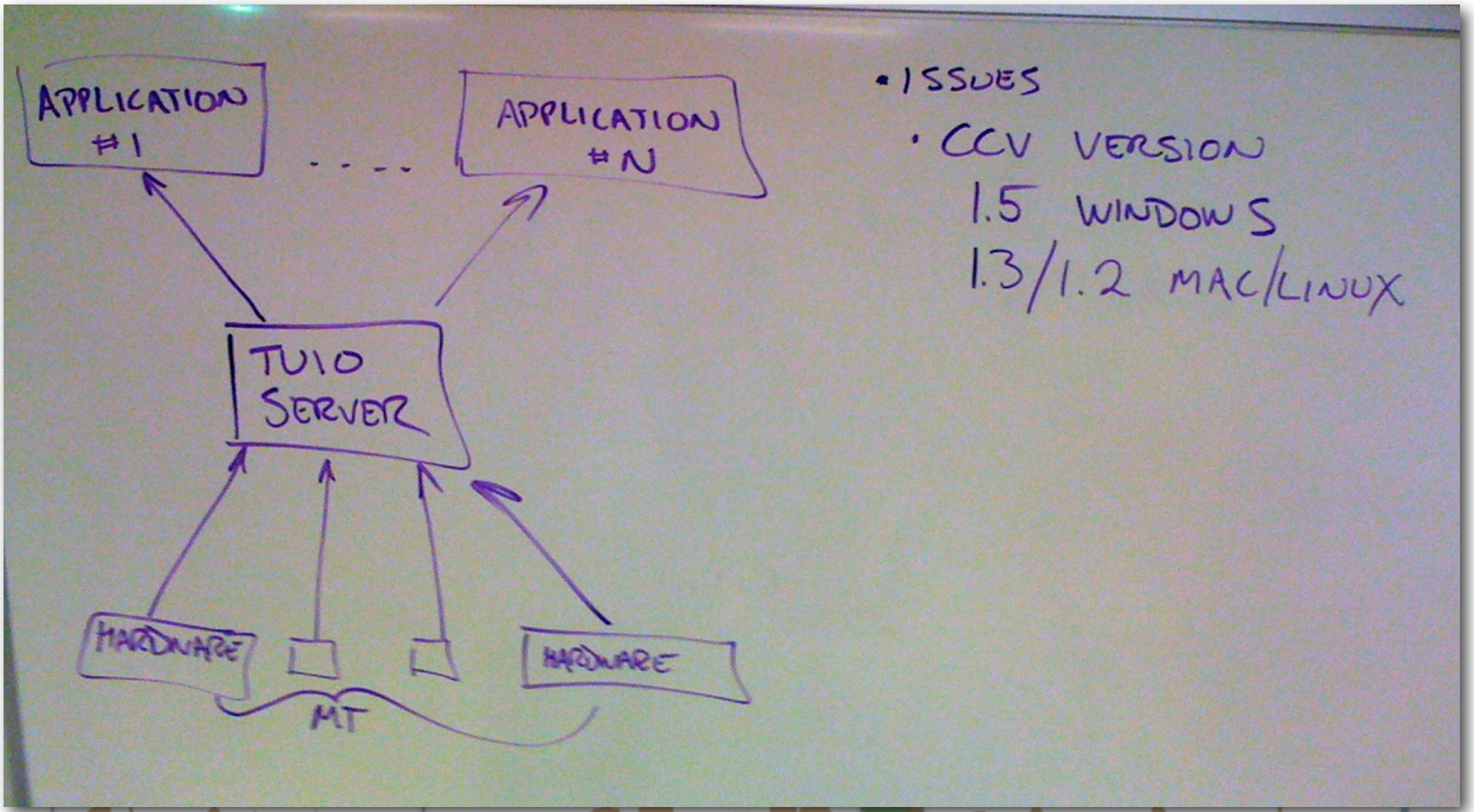
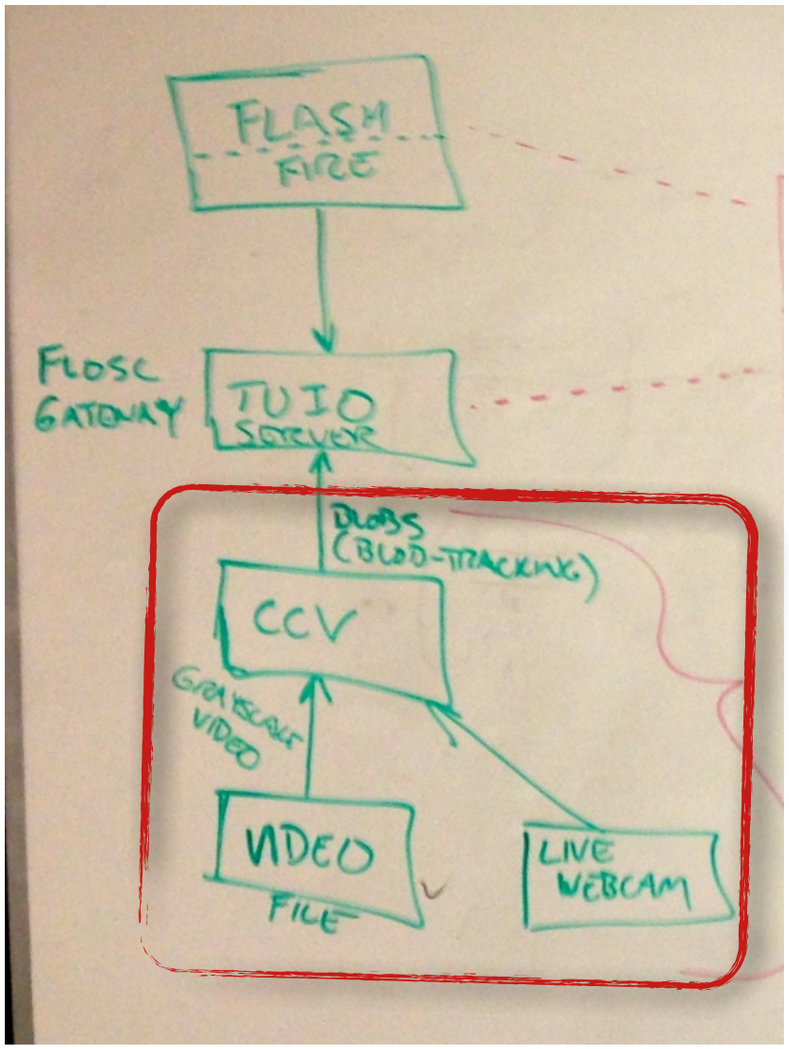
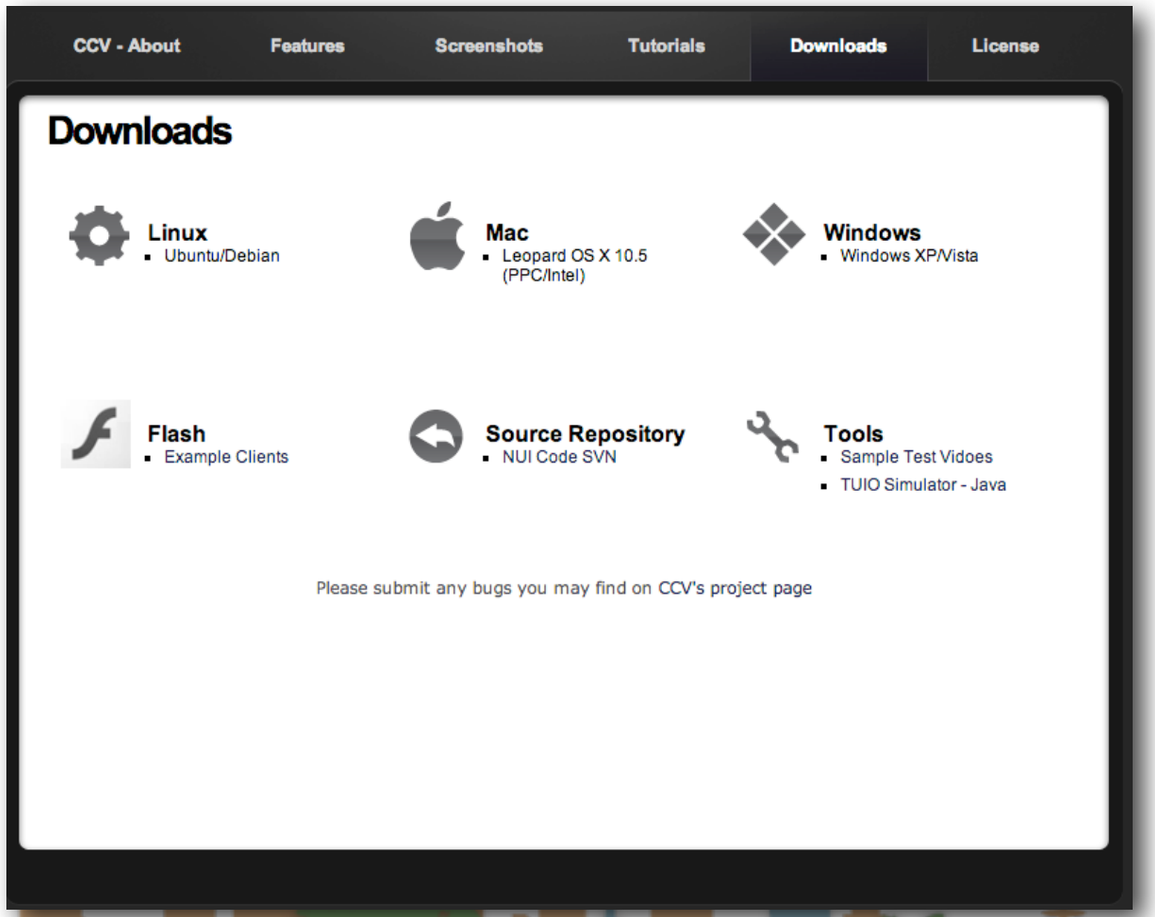


Review Task #21

How to do what we did in class



- Download Community Core Vision
  - http://ccv.nuigroup.com/



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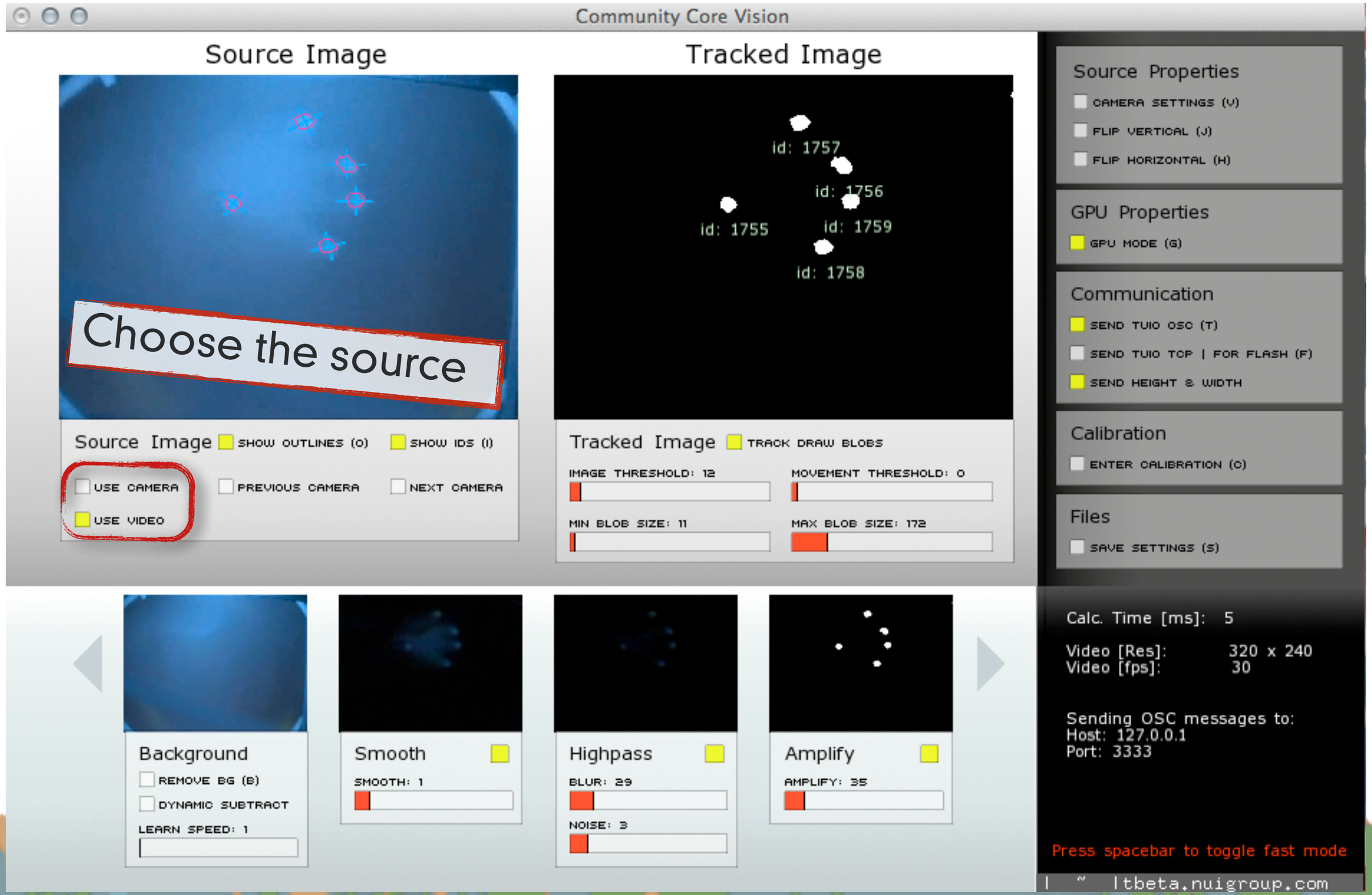

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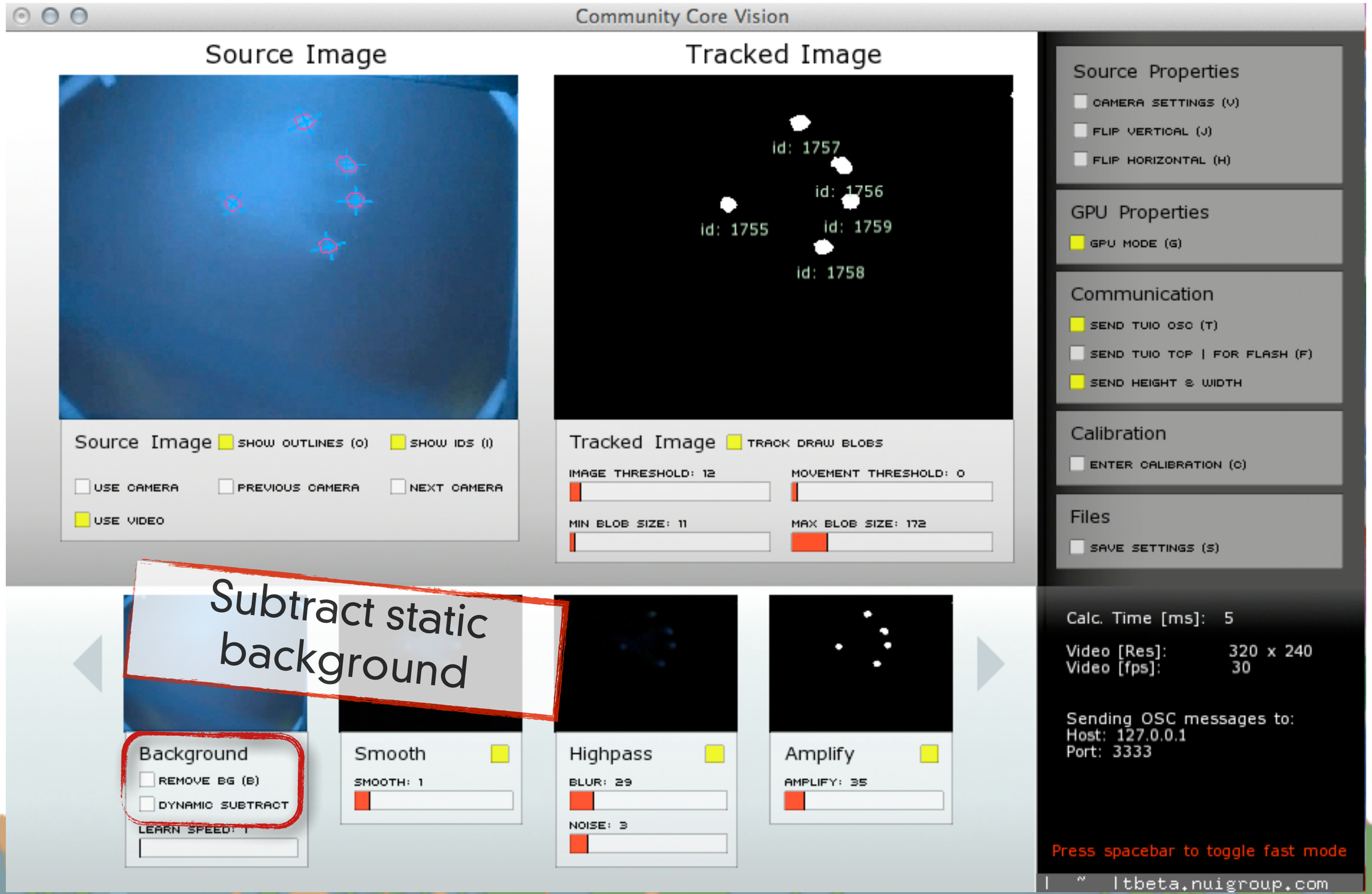

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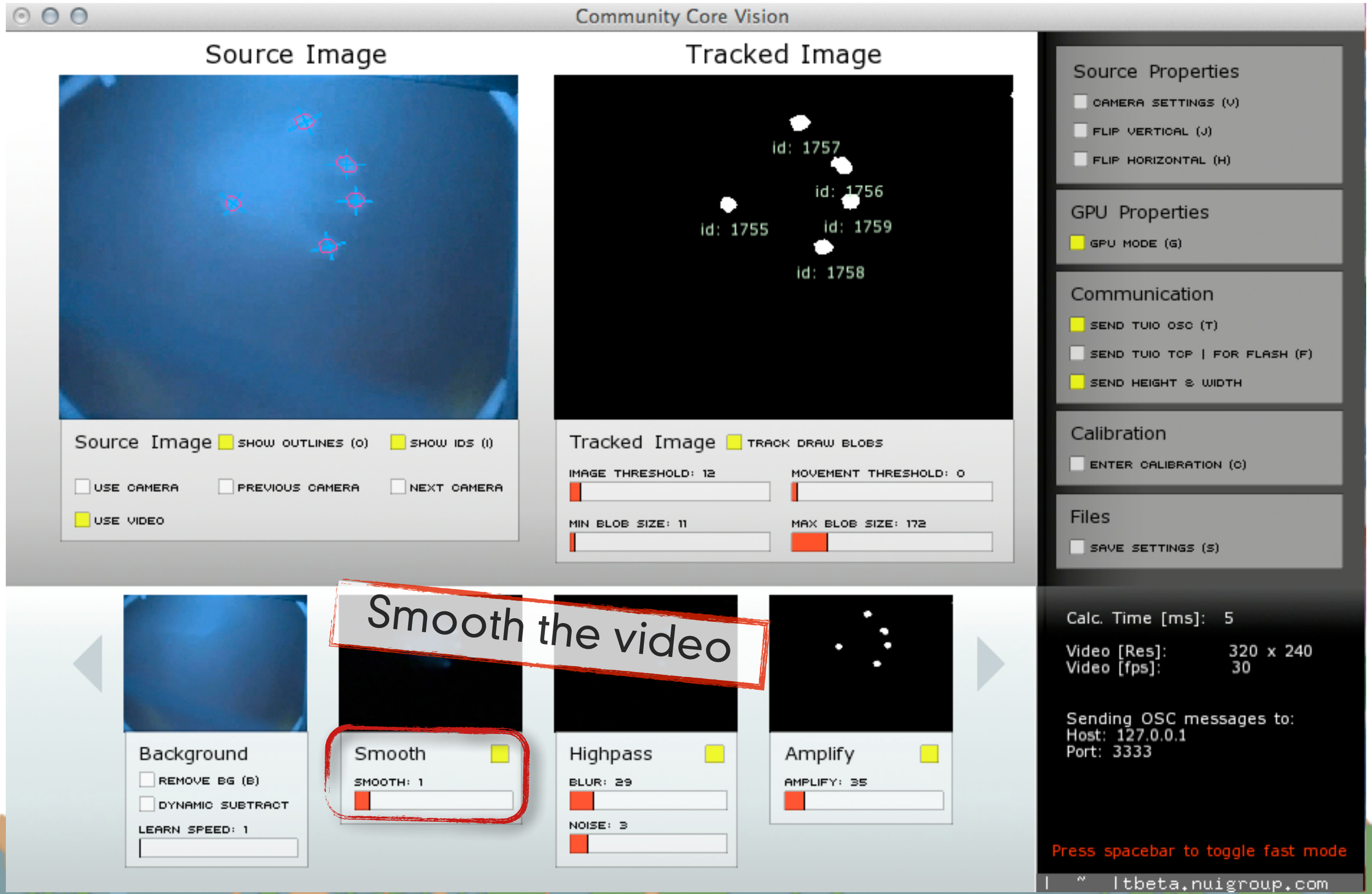

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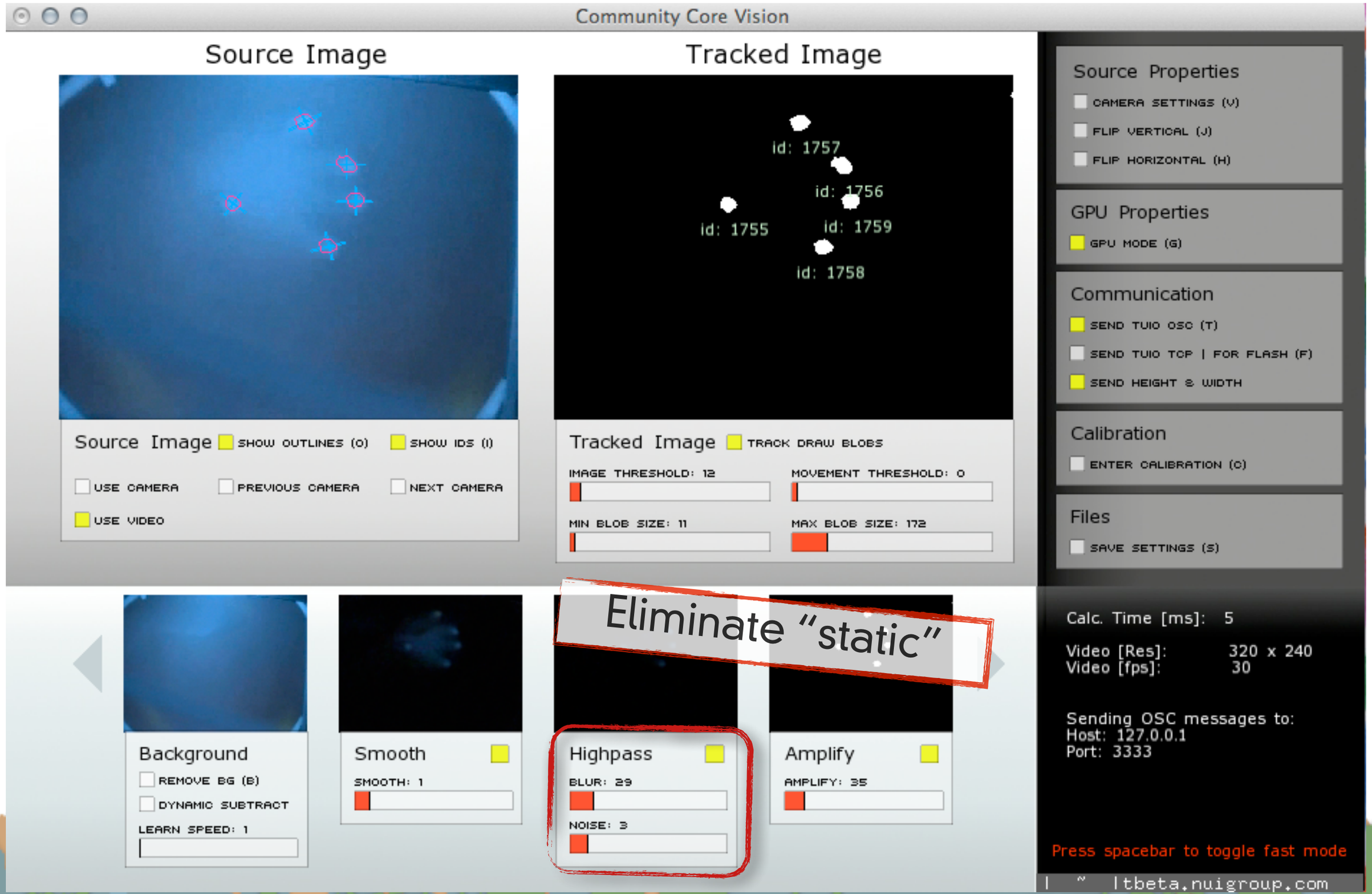

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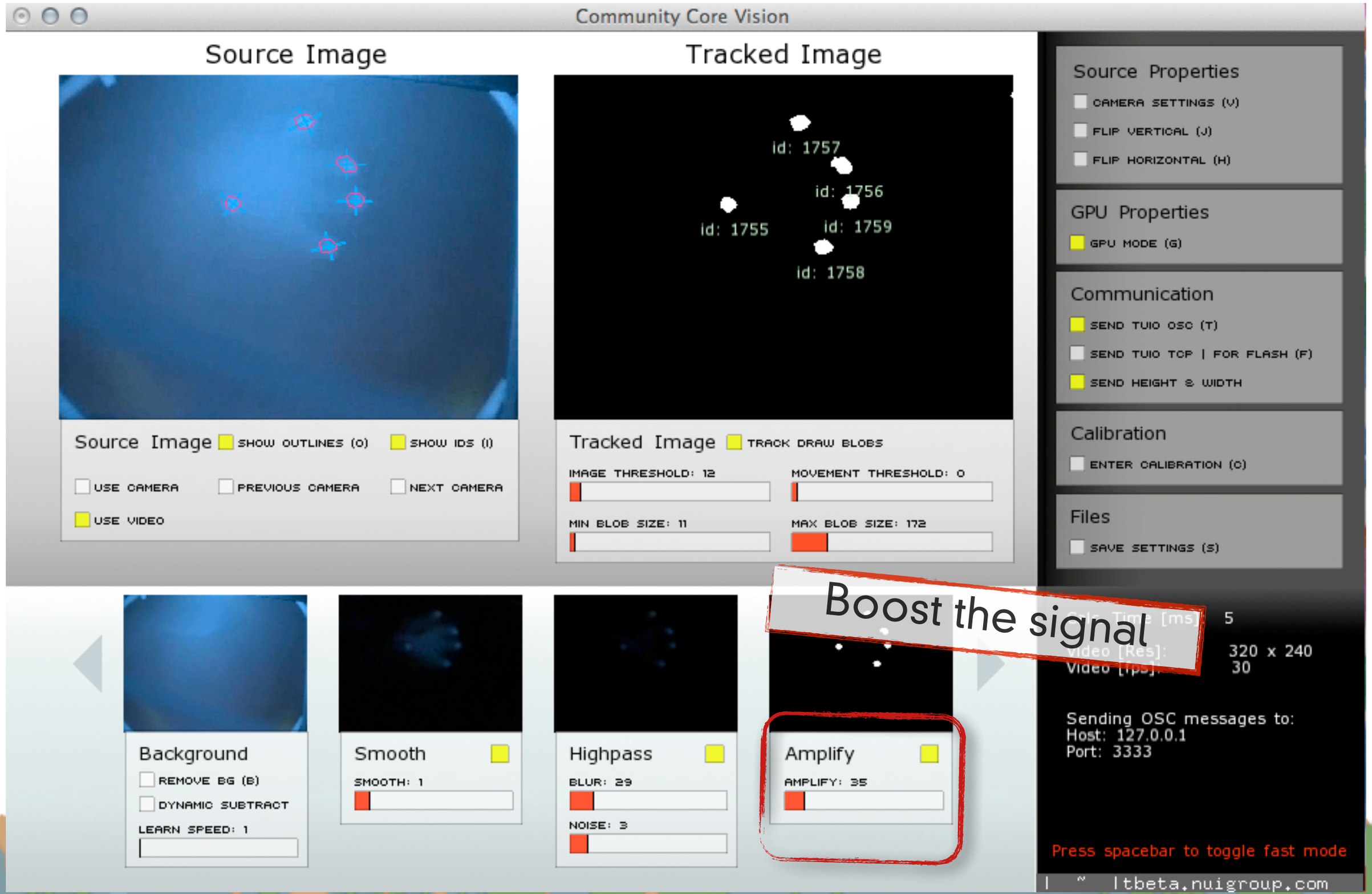

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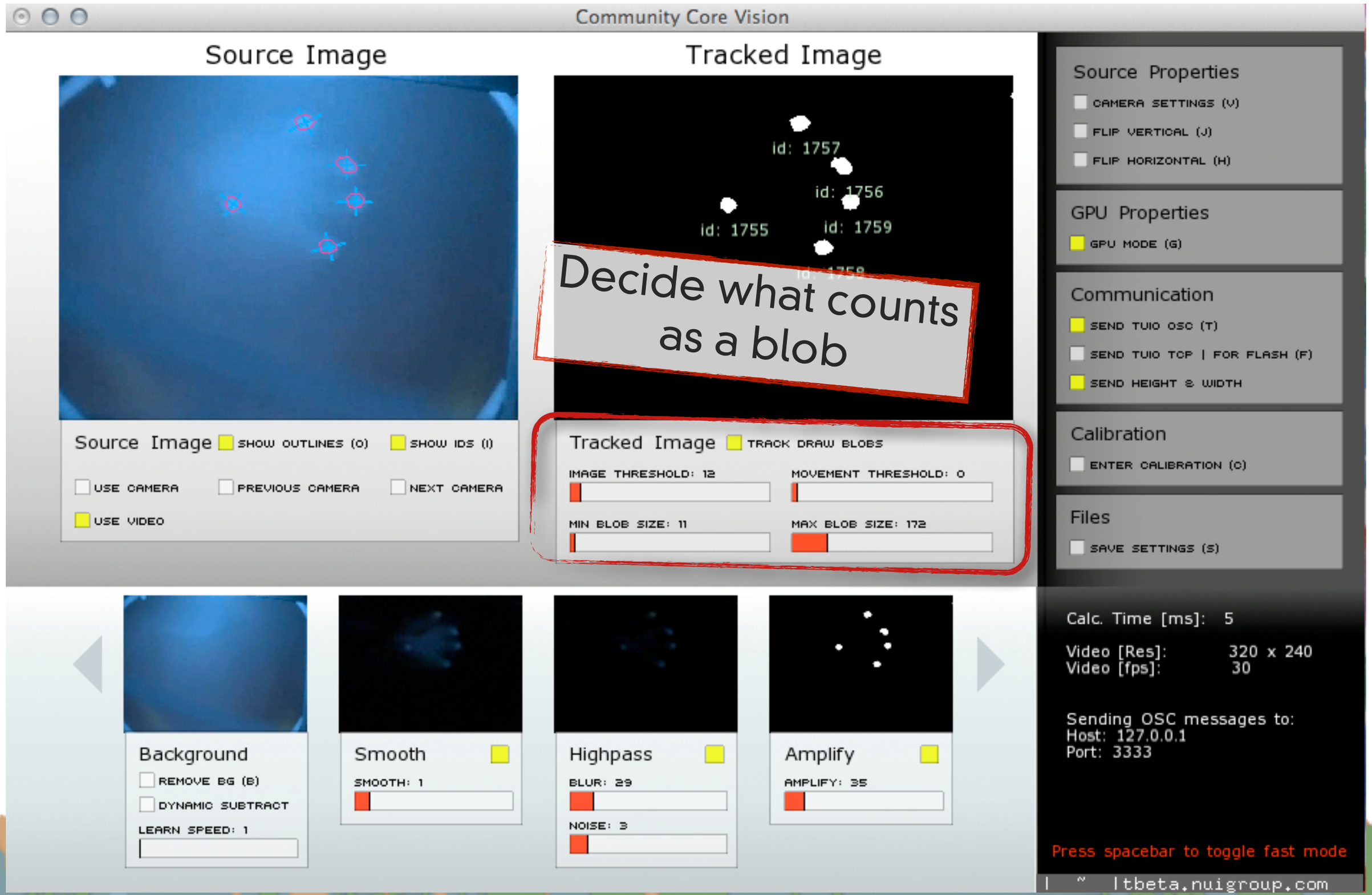

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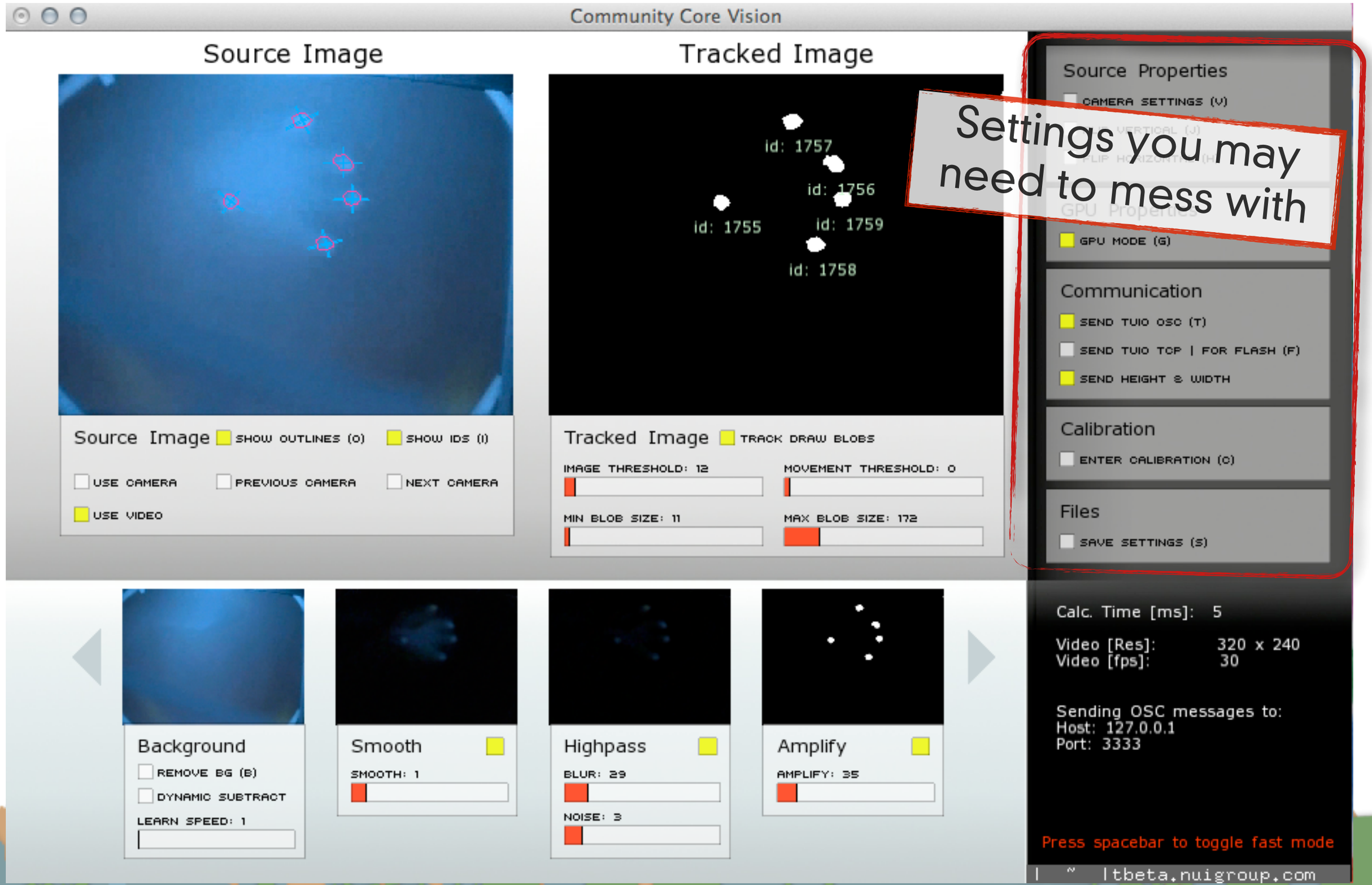

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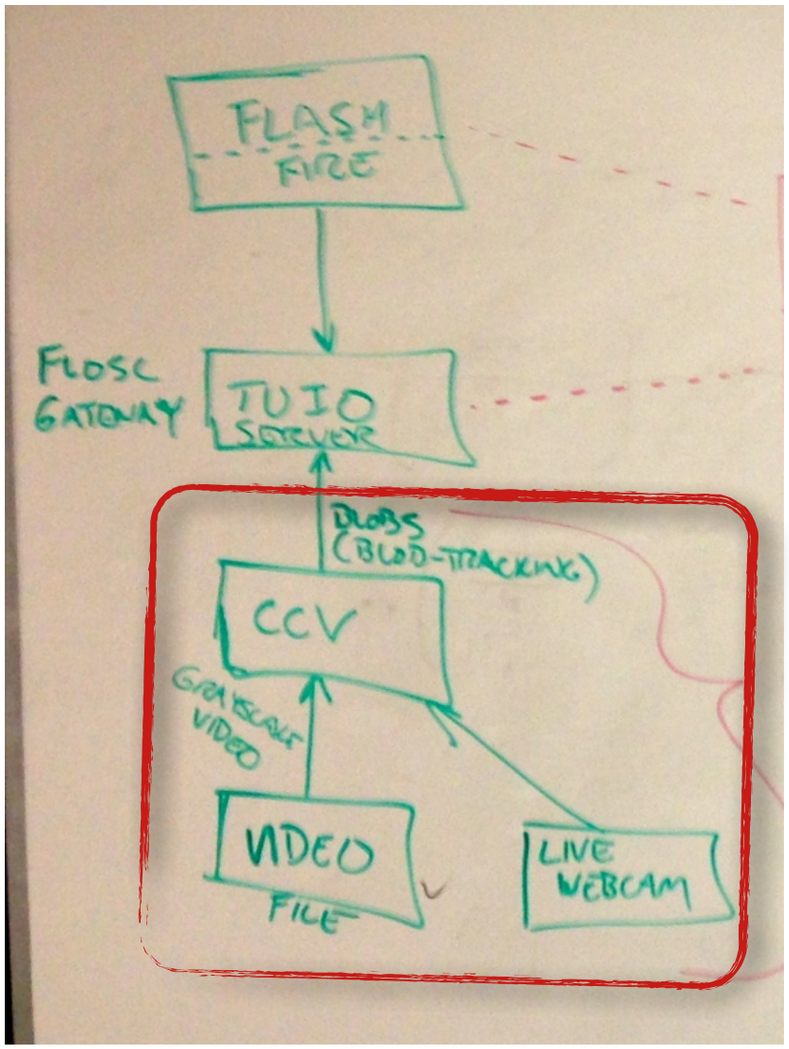


- There is also a configuration file for CCV
  - config.xml
  - GUI settings can be typed in this file
  - It may get overwritten from the GUI

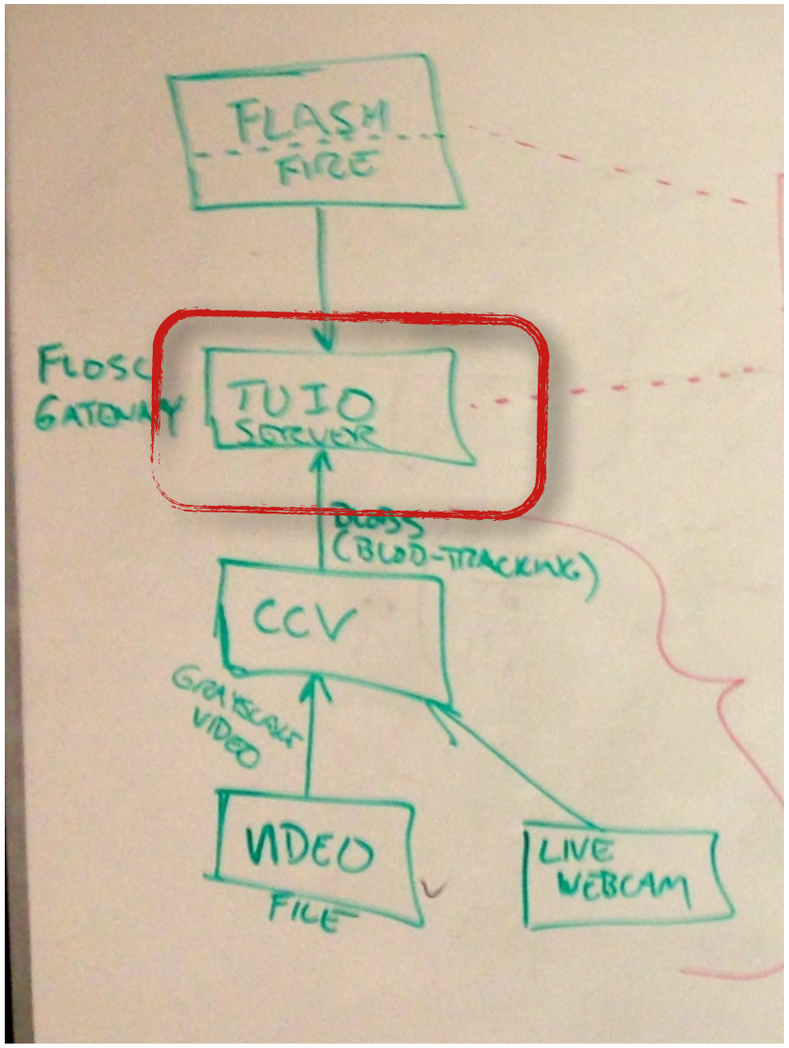
How to do what we did in class

```
<?xml version="1.0" ?>
<CONFIG>
    <!--////////////////////////////////////////

        YOU CAN MANUALLY EDIT THE FEATURES BELOW

    //////////////////////////////////////////// -->
    <!--// CAMERA SETTINGS // -->
    <CAMERA_0>
        <USECAMERA>1</USECAMERA>
        <DEVICE>1</DEVICE>
        <WIDTH>320</WIDTH>
        <HEIGHT>240</HEIGHT>
        <FRAMERATE>120</FRAMERATE>
    </CAMERA_0>
    <!--// NETWORK COMMUNICATION SETTINGS //-->
    <NETWORK>
        <LOCALHOST>127.0.0.1</LOCALHOST>
        <TUIO>0</TUIO>
        <TUIOPORT_OUT>3333</TUIOPORT_OUT>
        <TUIOFLASHPORT_OUT>3000</TUIOFLASHPORT_OUT>
    </NETWORK>
    <!--// VIDEO SETTINGS // -->
    <VIDEO>
        <FILENAME>test_videos/RearDI.m4v</FILENAME>
    </VIDEO>
    <!--// BLOB SETTINGS // -->
    <BLOBS>
        <MAXNUMBER>20</MAXNUMBER>
    </BLOBS>
    <!--////////////////////////////////////////
```

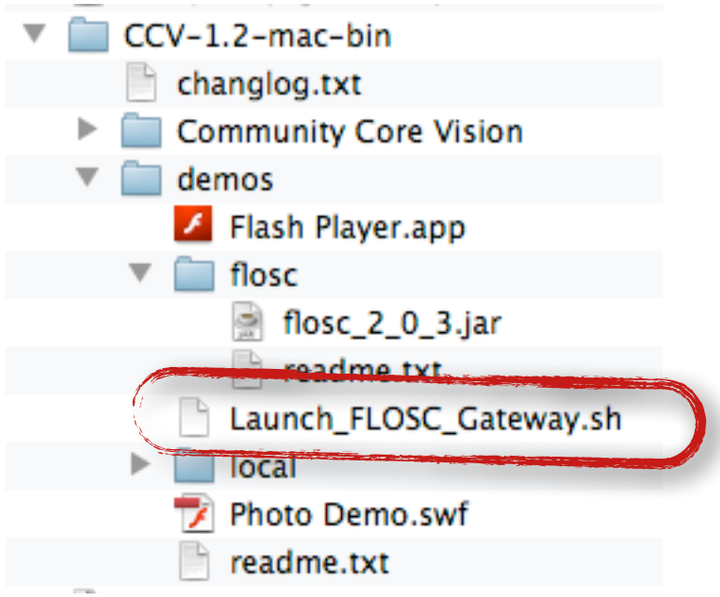
How to do what we did in class

```
<!--//////////////////////////////////////////////

    DO NOT EDIT THE VALUES BELOW

////////////////////////////////////////////// -->
<APPLICATION>
    <TITLE>Community Core Visision</TITLE>
    <VERSION>1.2.0</VERSION>
</APPLICATION>
<WINDOW>
    <WIDTH>950</WIDTH>
    <HEIGHT>600</HEIGHT>
</WINDOW>
<BOOLEAN>
    <PRESSURE>4</PRESSURE>
    <LABELS>1</LABELS>
    <OUTLINES>1</OUTLINES>
    <LEARNBG>0</LEARNBG>
    <TUIO>1</TUIO>
    <VMIRROR>0</VMIRROR>
    <HMIRROR>0</HMIRROR>
    <HIGHPASS>1</HIGHPASS>
    <AMPLIFY>1</AMPLIFY>
    <SMOOTH>0</SMOOTH>
    <GPU>1</GPU>
    <DYNAMICBG>1</DYNAMICBG>
    <SNAPSHOT>0</SNAPSHOT>
    <MINIMODE>0</MINIMODE>
    <HEIGHTWIDTH>1</HEIGHTWIDTH>
    <OSCMODE>1</OSCMODE>
    <TCPMODE>0</TCPMODE>
    <TRACKDARK>1</TRACKDARK>
</BOOLEAN>
<INT>
    <MINMOVEMENT>2</MINMOVEMENT>
    <MINBLOBSIZE>11</MINBLOBSIZE>
    <MAXBLOBSIZE>86</MAXBLOBSIZE>
    <!--// FILTERS SETTERS //-->
    <THRESHOLD>43</THRESHOLD>
    <HIGHPASSBLUR>40</HIGHPASSBLUR>
    <HIGHPASSNOISE>8</HIGHPASSNOISE>
    <HIGHPASSAMP>35</HIGHPASSAMP>
    <SMOOTH>1</SMOOTH>
    <BGLEARNRATE>450.099976</BGLEARNRATE>
</INT>
</CONFIG>
```

How to do what we did in class



- For Flash Demos run the TUIO server standalone



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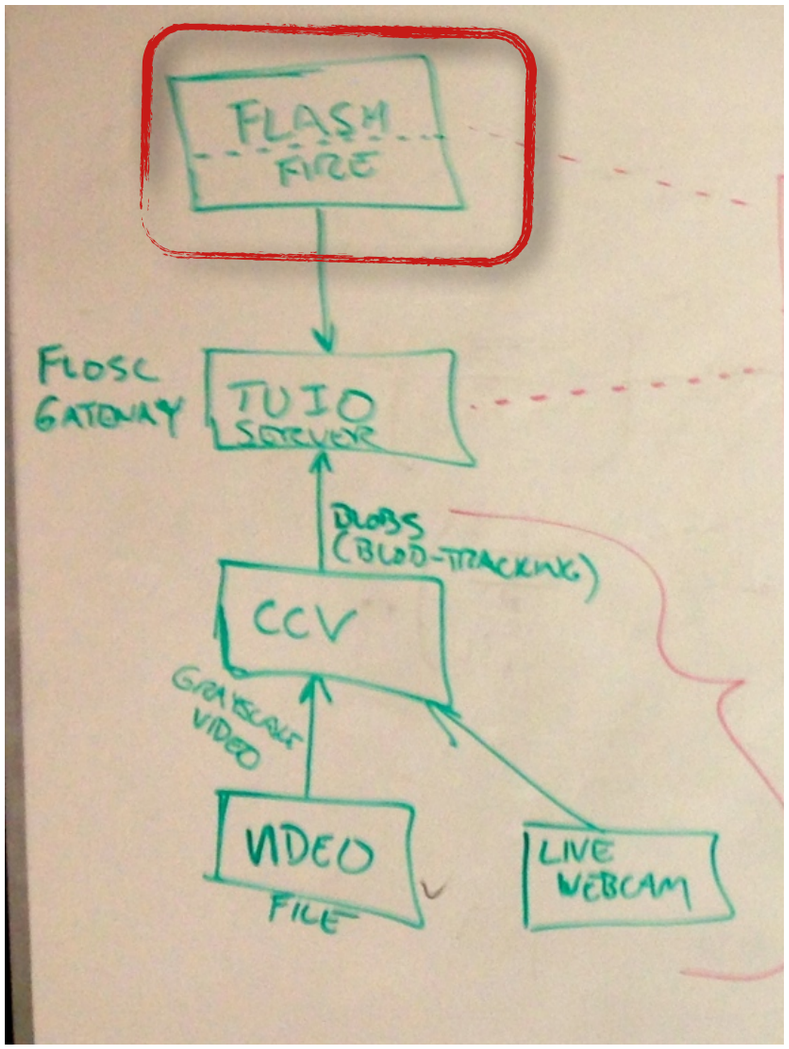
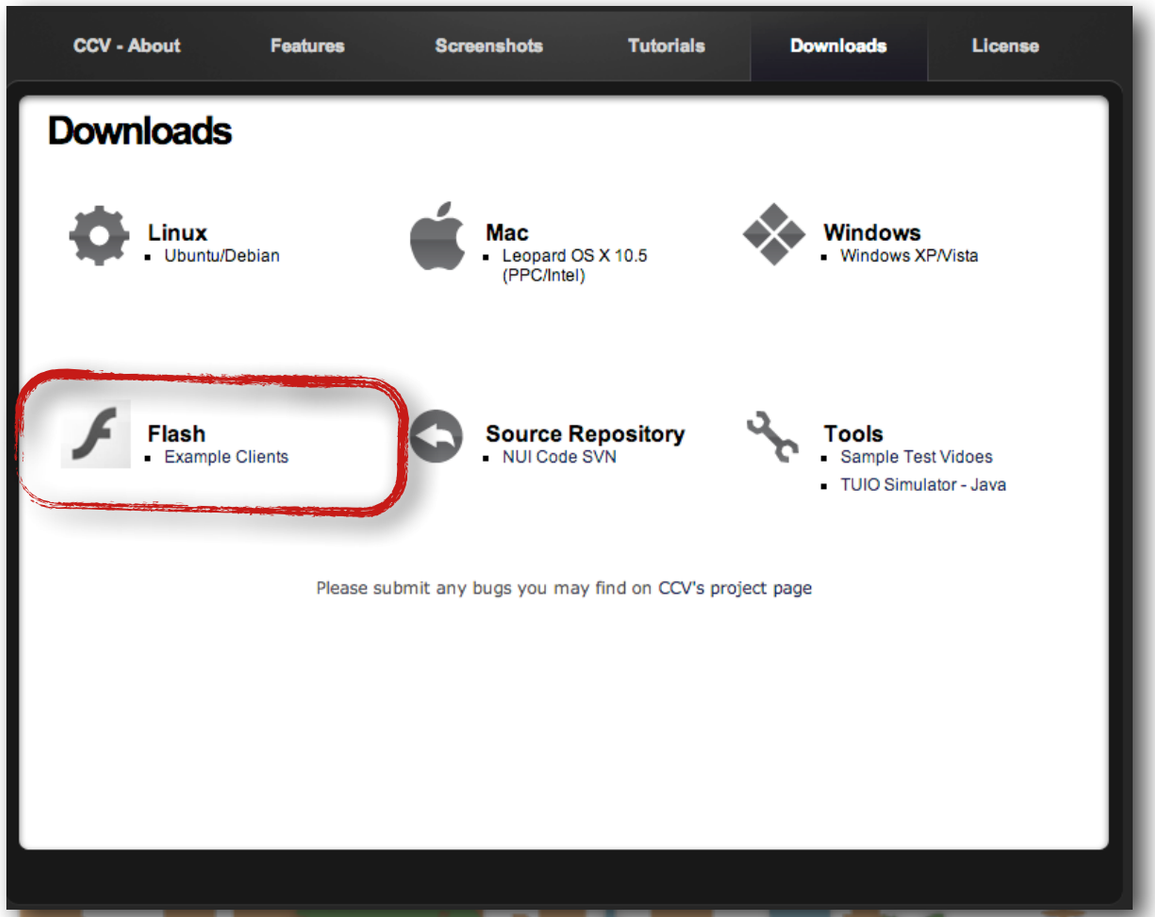


- Download Flash Demos
  - http://ccv.nuigroup.com/



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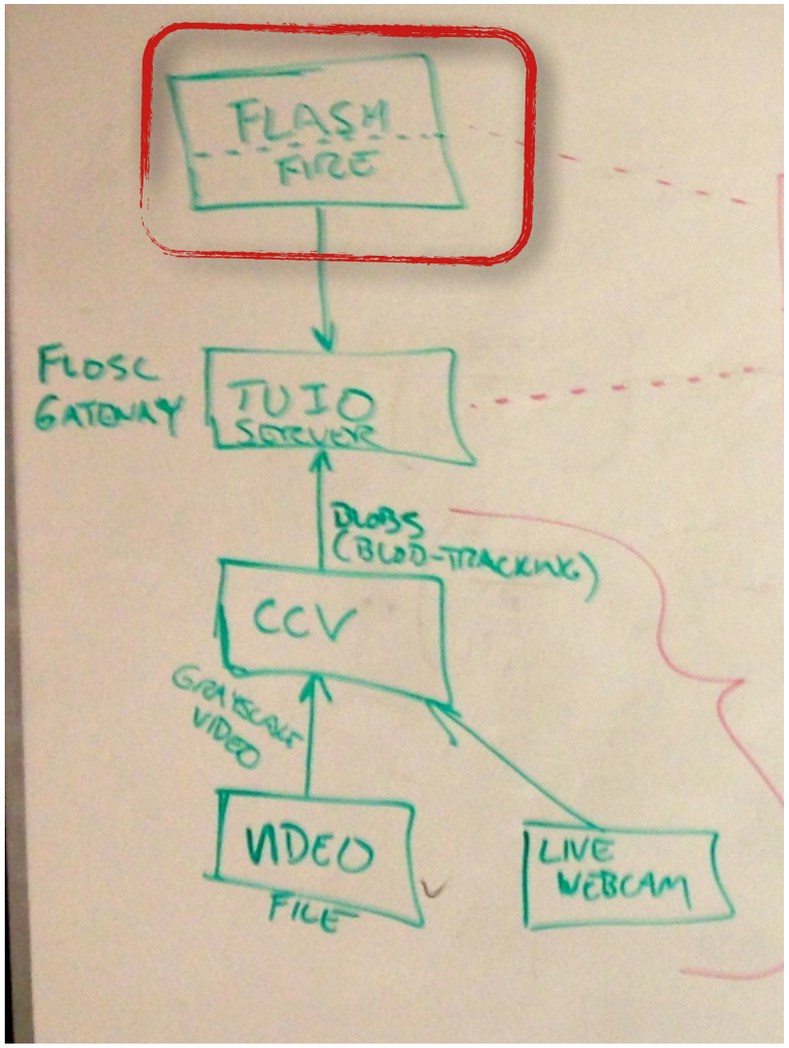

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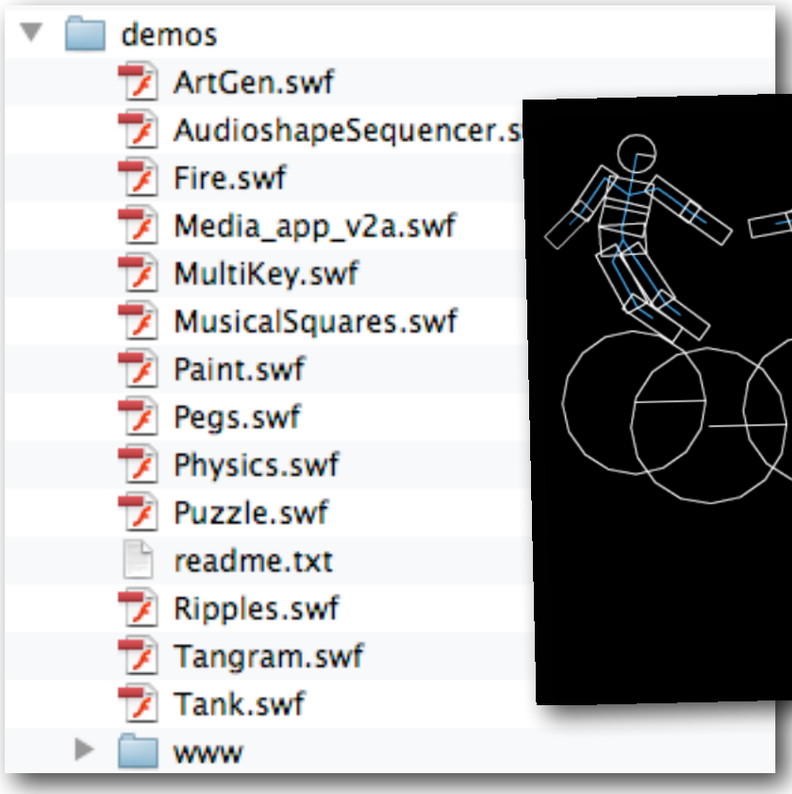

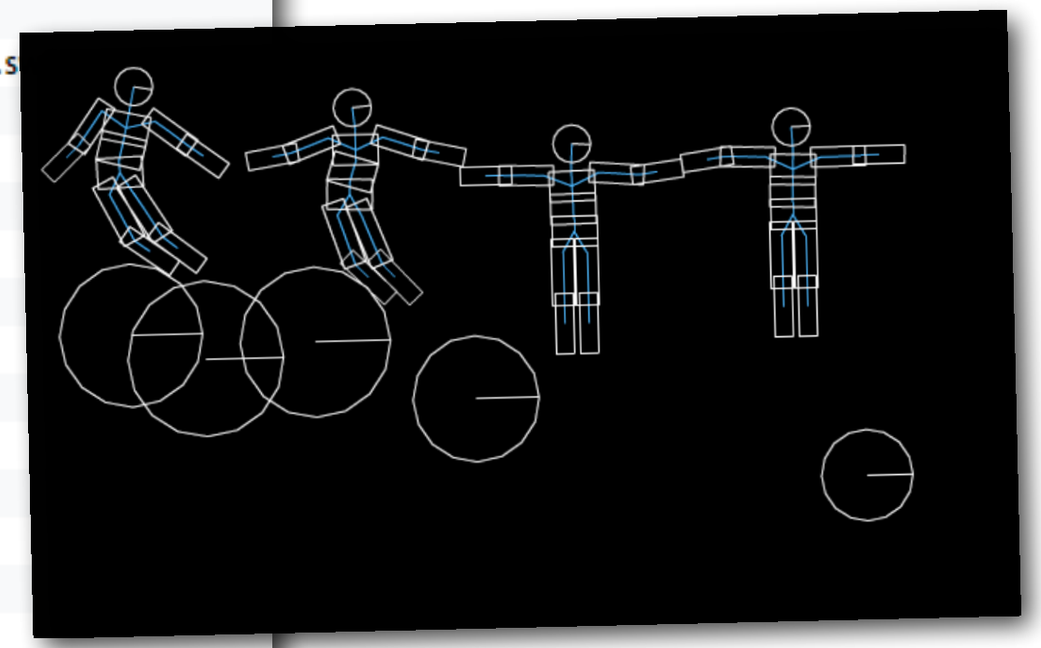

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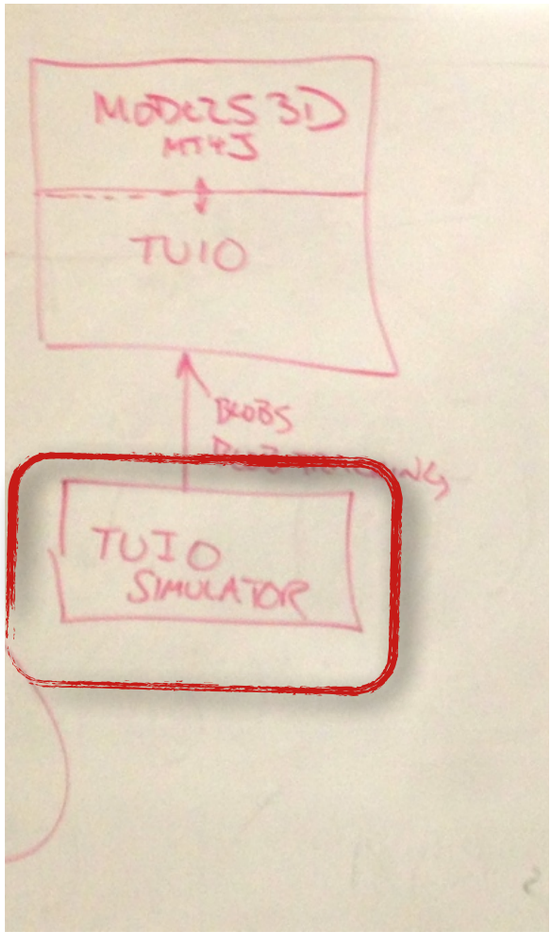
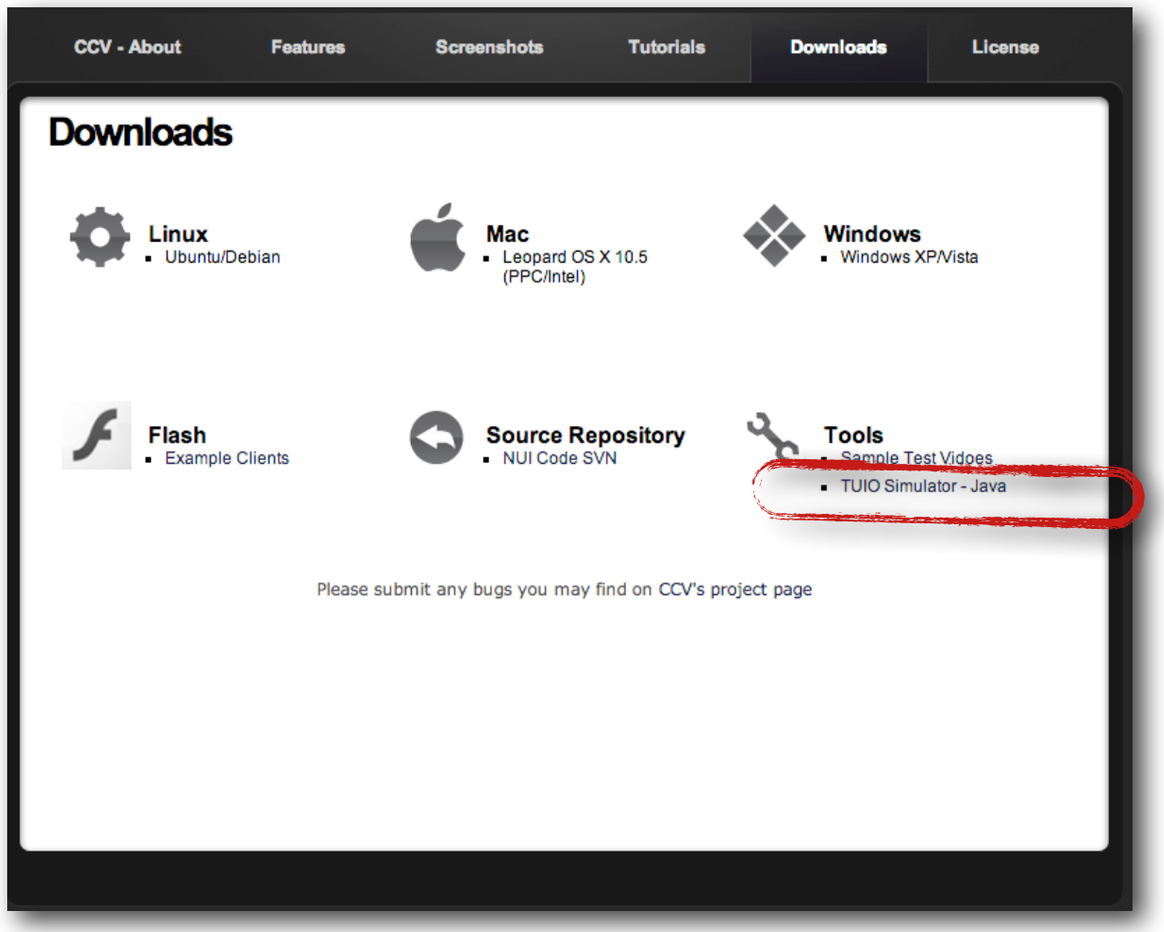


- Download TUIO Simulator



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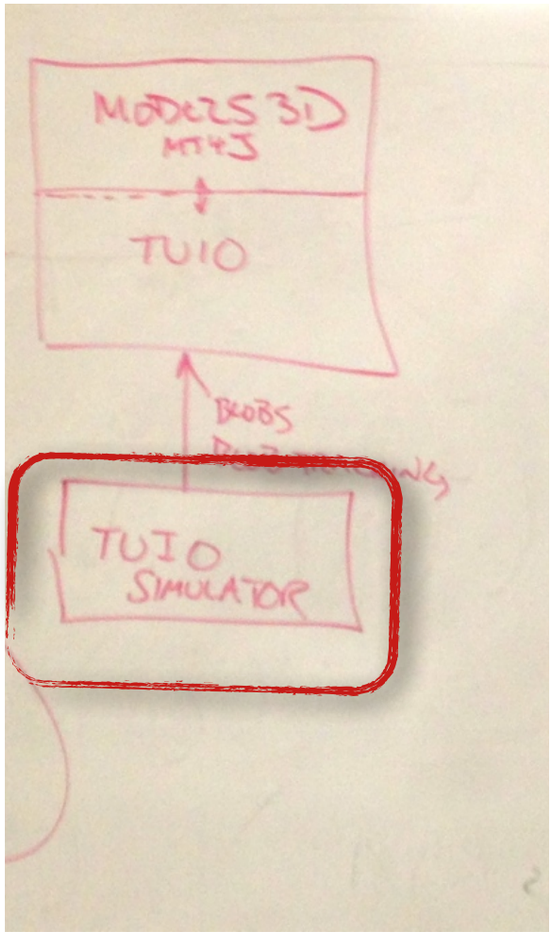
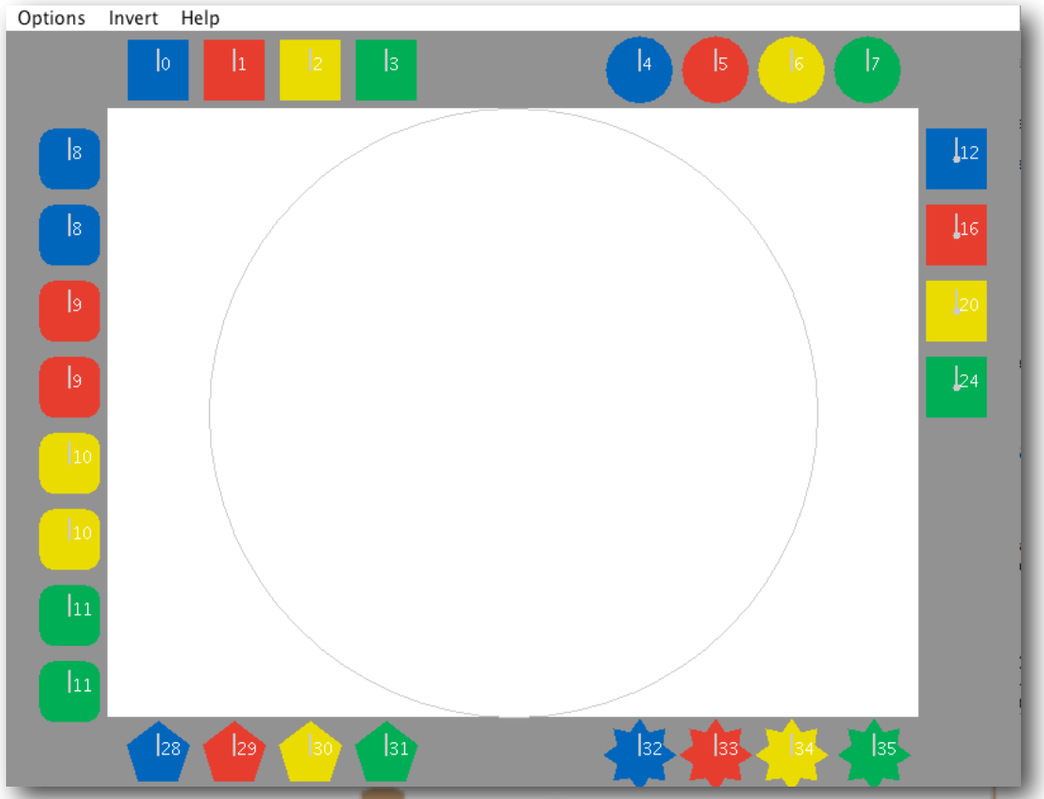


- Run as a java program

```
$ java -jar TuioSimulator.jar
sending TUIO messages to 127.0.0.1:3333
```



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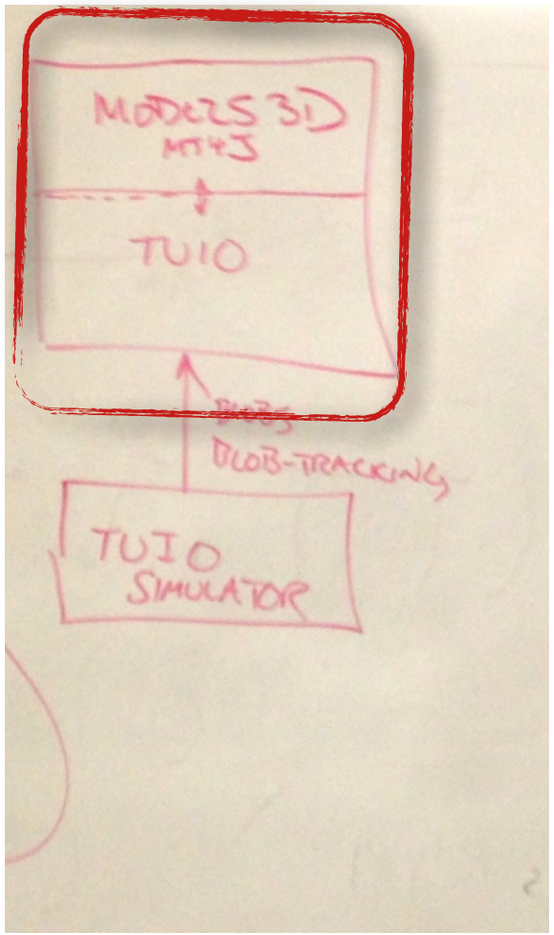
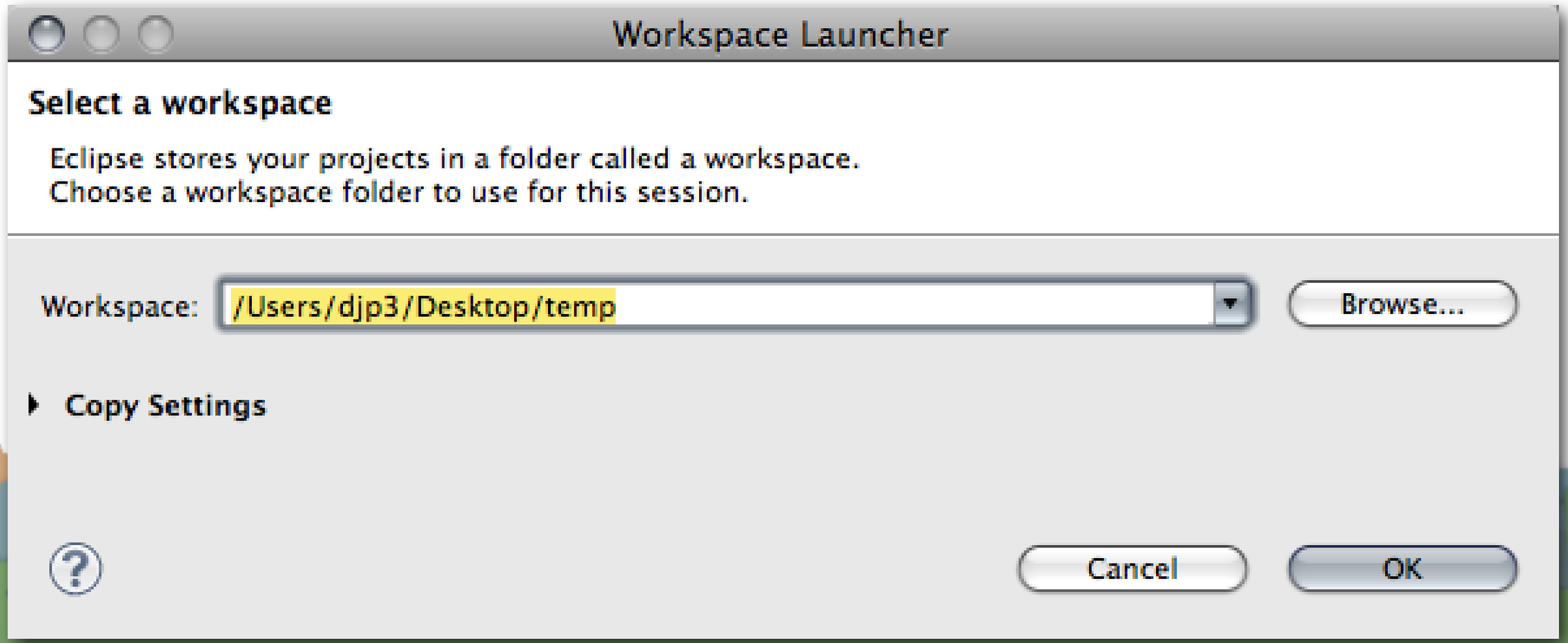


- Setup MT4J in Eclipse

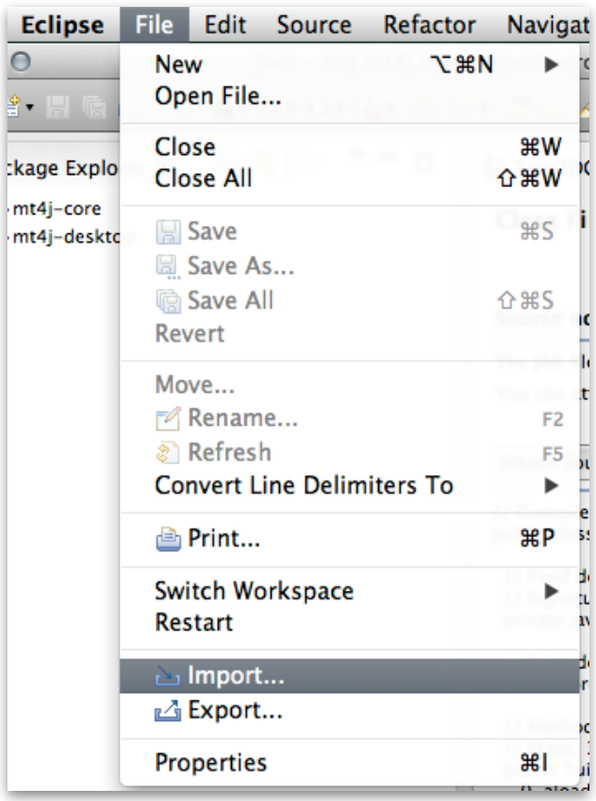
Getting the software going

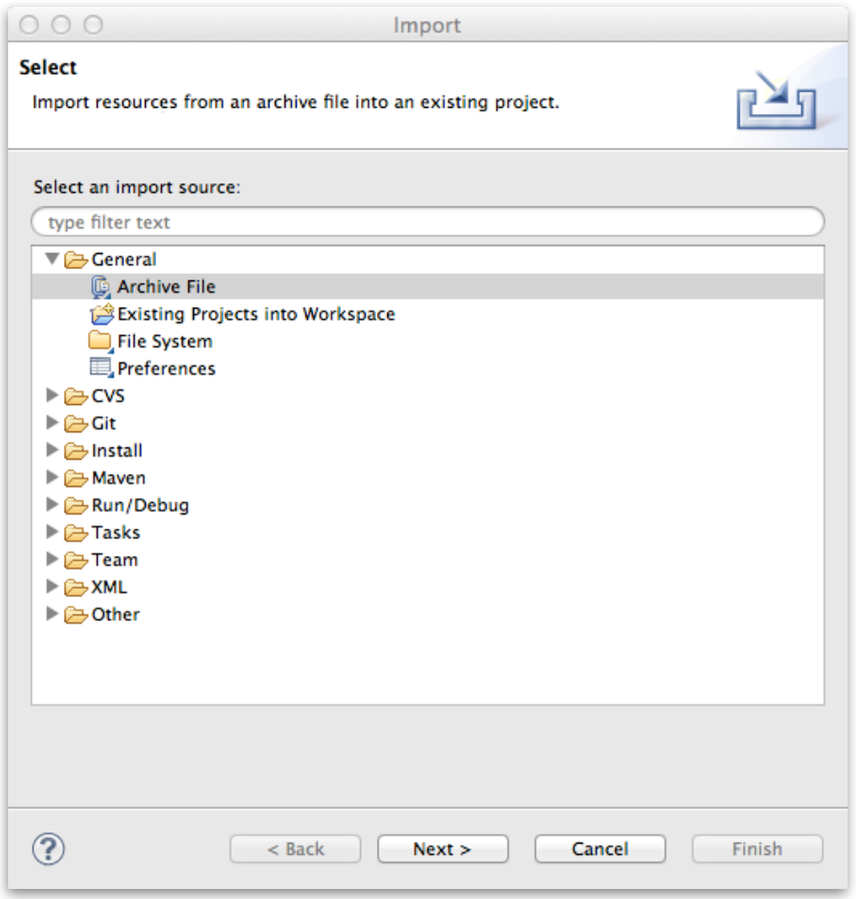
- Download and Install Eclipse
  - http://www.eclipse.org/
- Download MT4J
  - http://www.mt4j.org/mediawiki/index.php/Downloads
- Pick a directory and create a new workspace in Eclipse

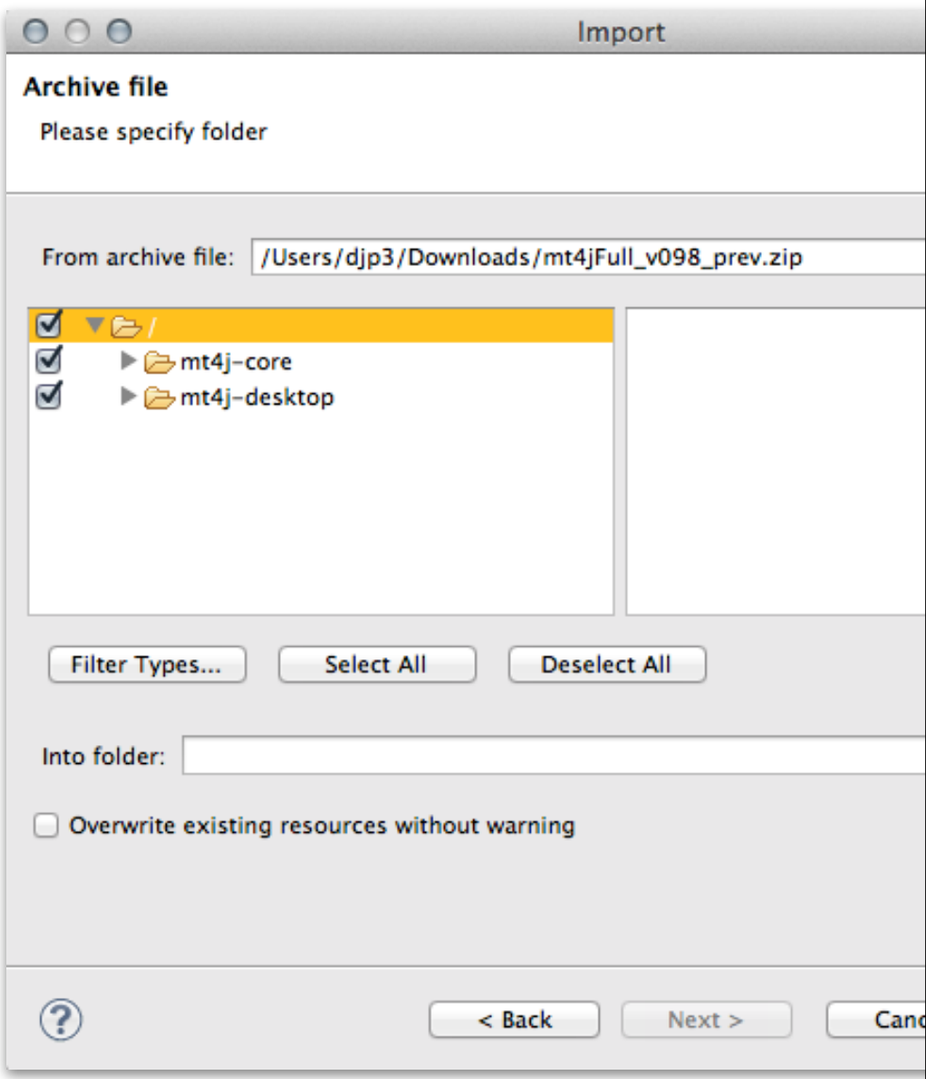


Getting the software going

- Import a new archive Java Project in Eclipse

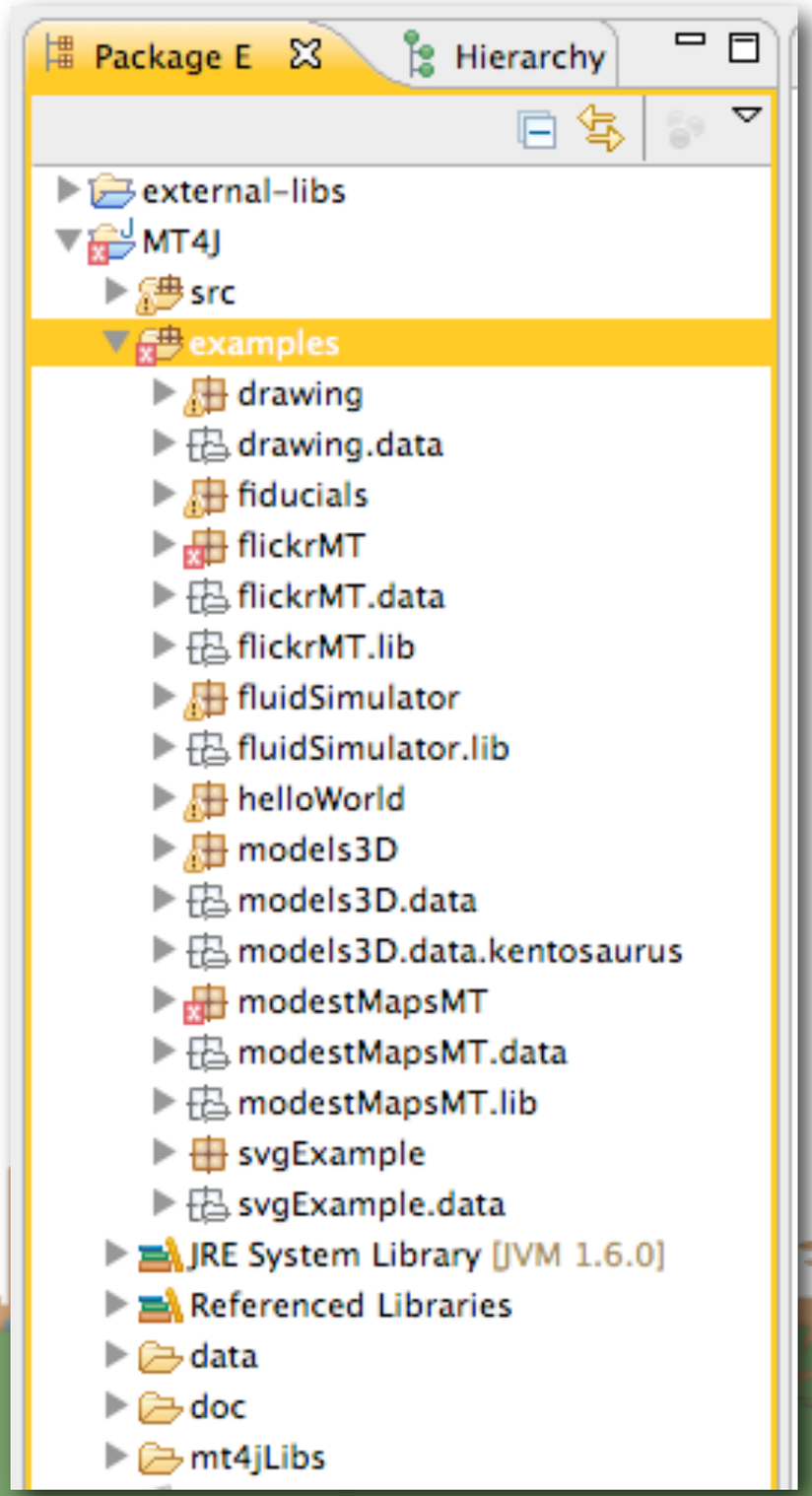






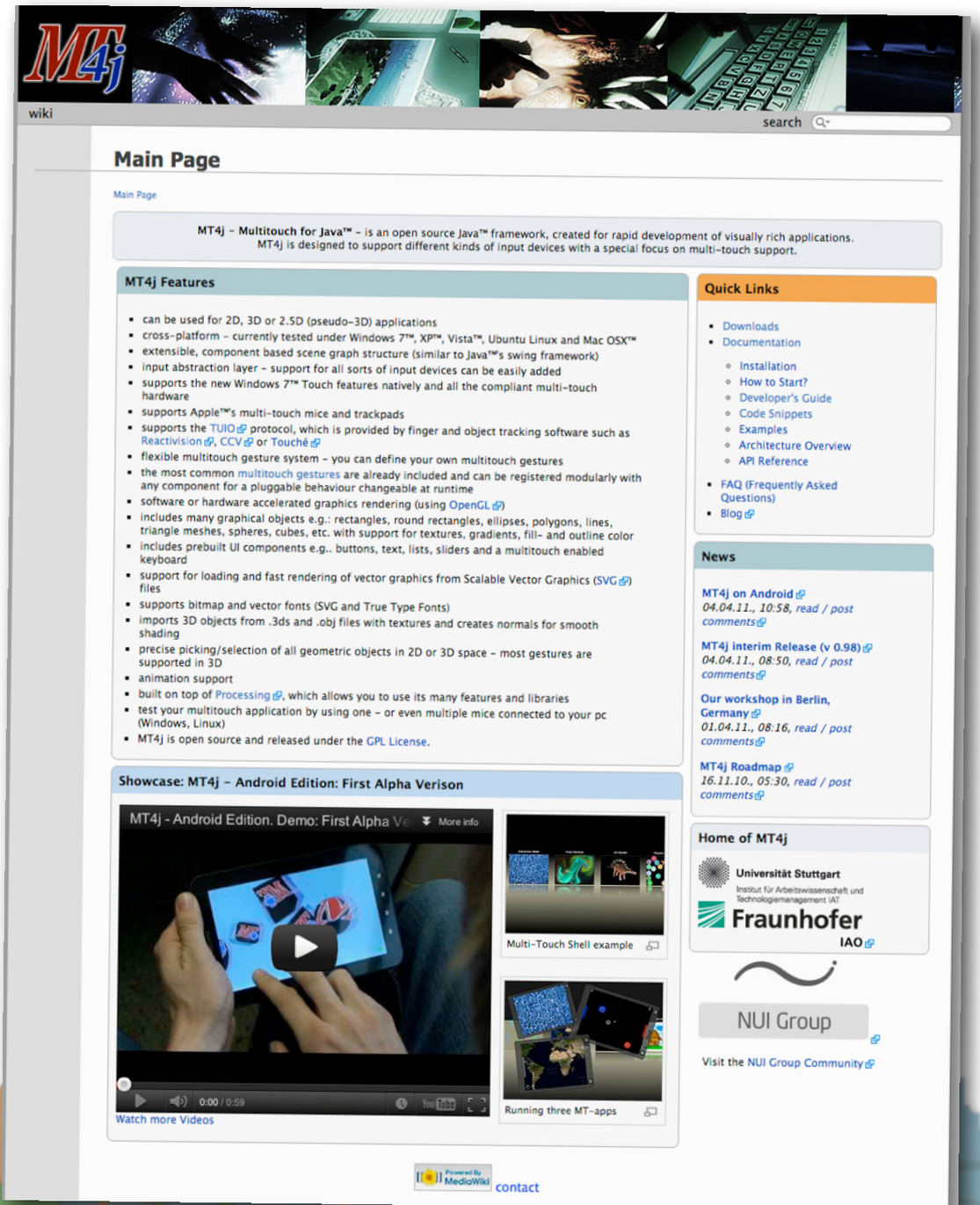
Getting the software going

- When you run an MT4J program the TUIO server is built in
  - Hello World
  - Test Scene
  - MTGestures
  - Space Scene
  - Fluid Simulator



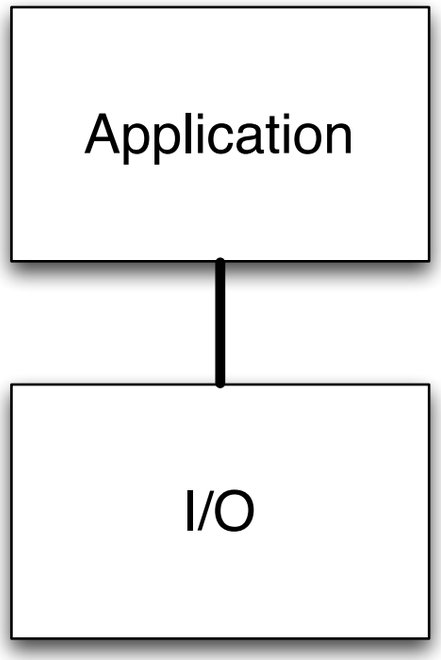
Getting the software going

- The MT4J page has information on how to use MT4J
  - It's a visualization system
  - It is complicated
  - Start with an example
  - Then modify it



How to go about doing Task #21

- Get an end-to-end demo running with off the shelf stuff
- Then slowly replace the pieces with your implementations



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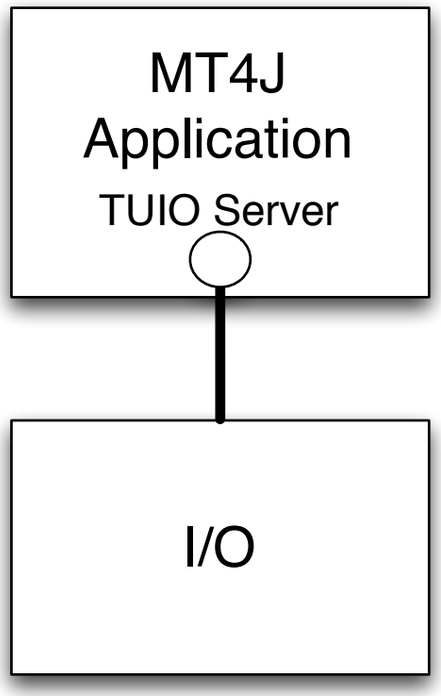

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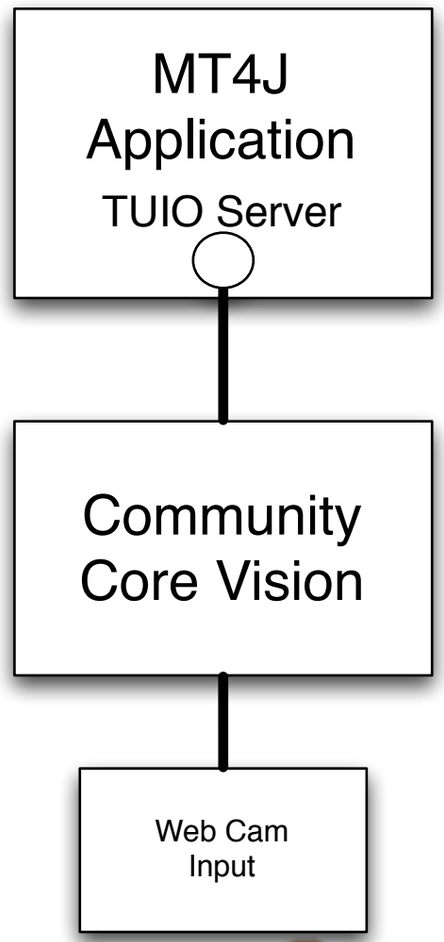

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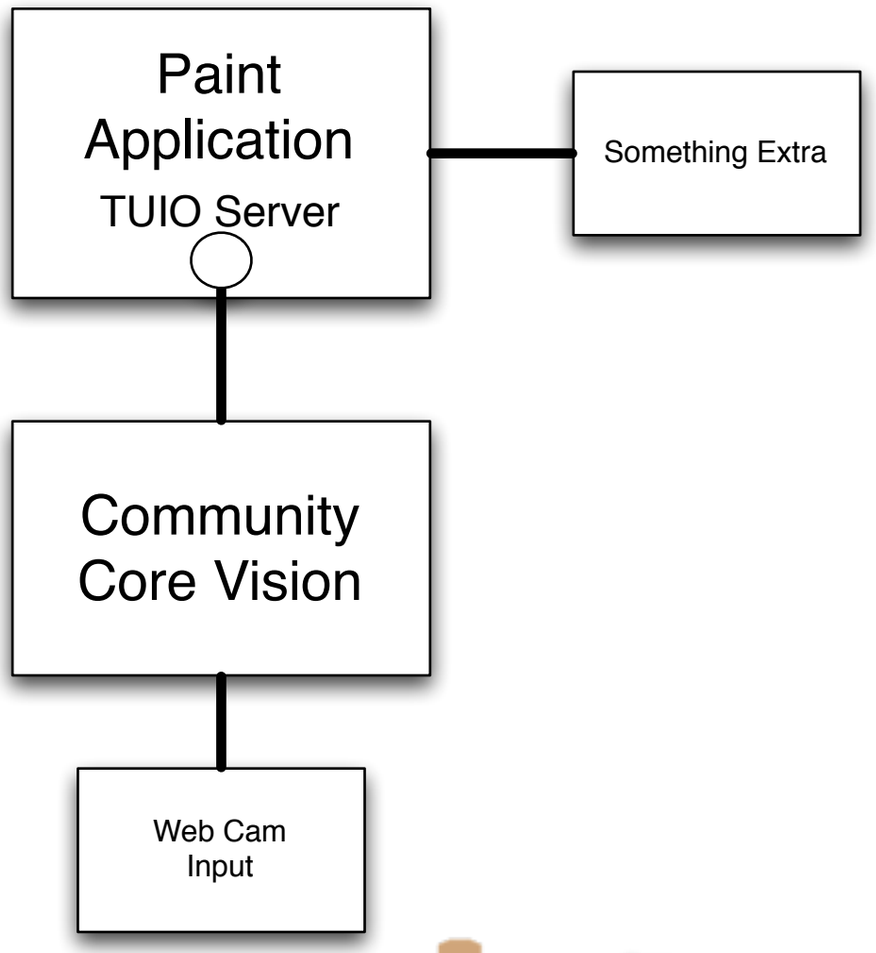

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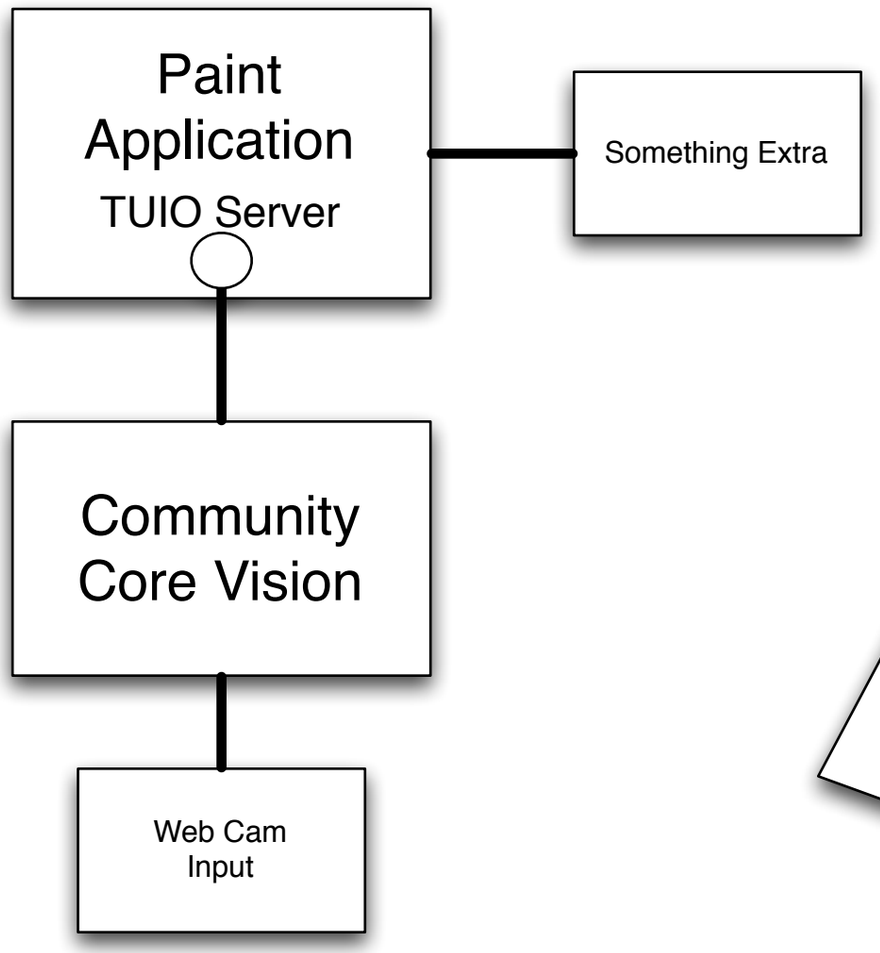

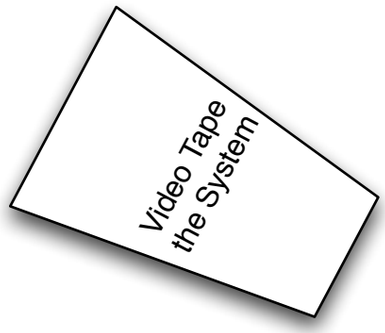

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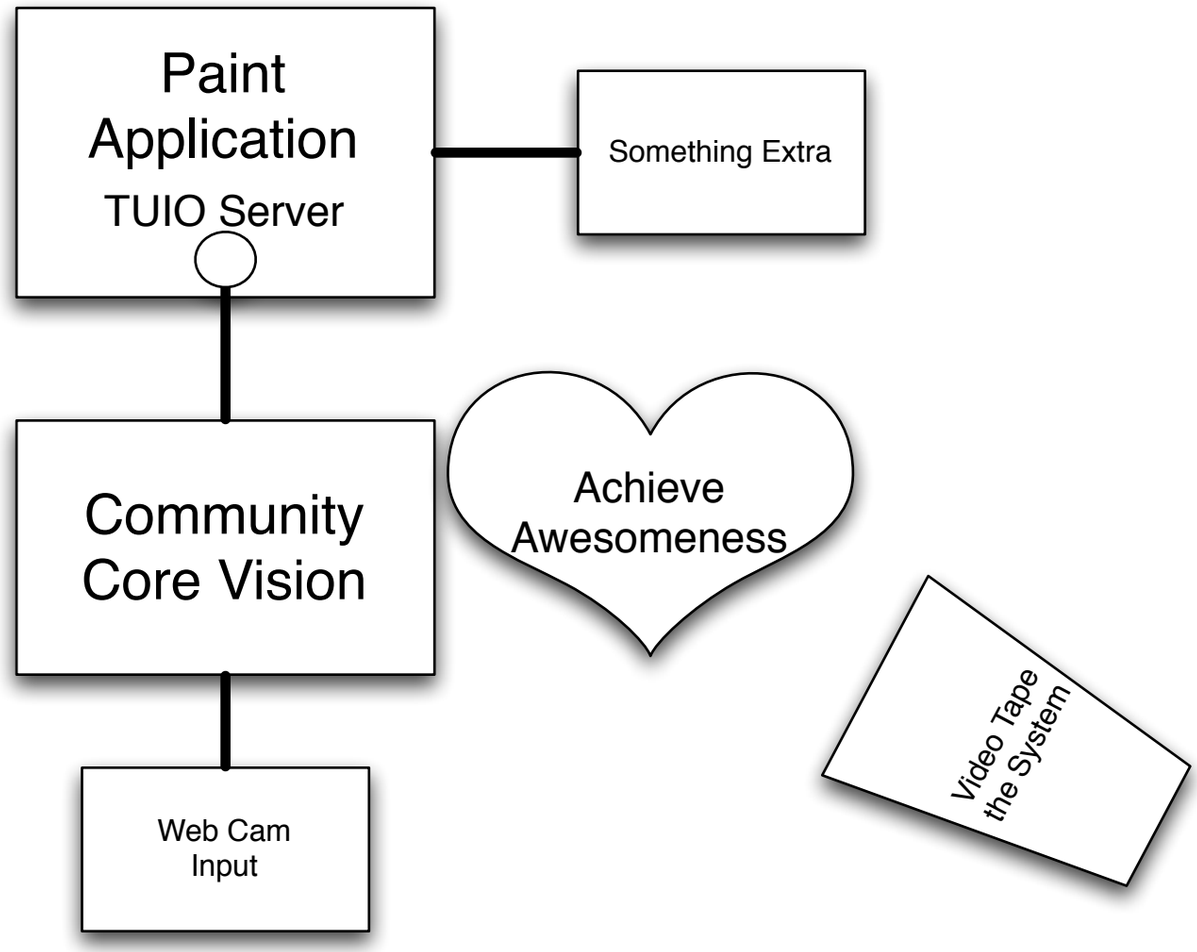
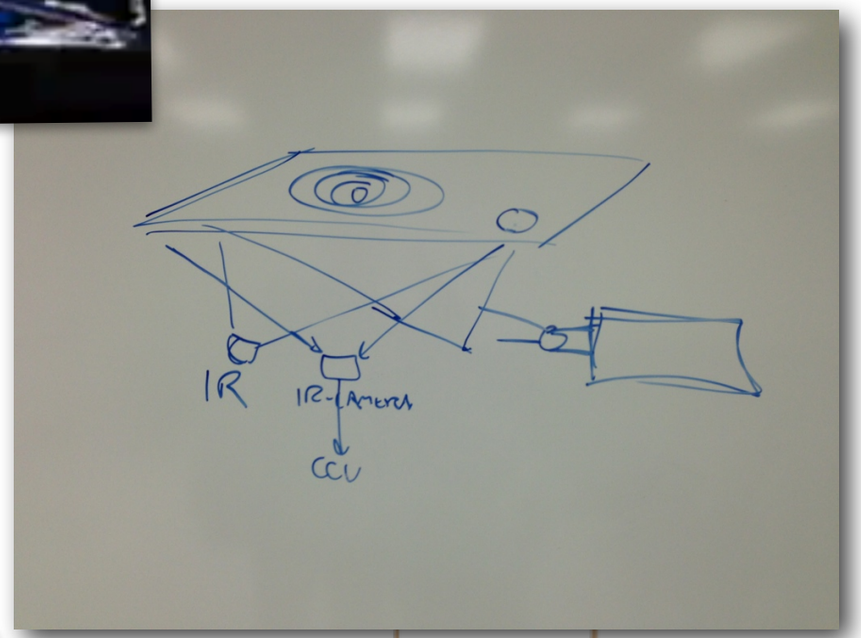
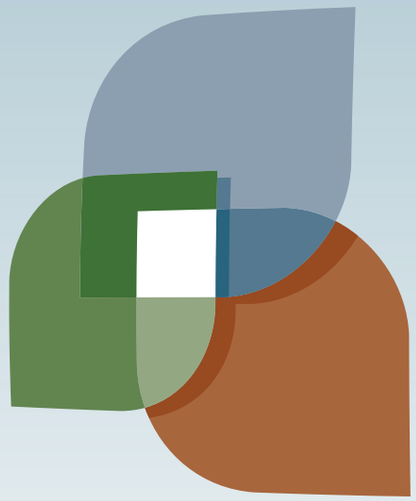


How to go about doing Task #21

- Options for increased awesomeness
  - Do a different application than a paint program
    - Make sure it needs multi-touch (talk to prof.)
  - Do a different input than a webcam
    - Make sure it is more than just a download (talk to prof.)
  - Remember this can be a portfolio piece!

How to go about doing Task #21





LUCI