

# MRSD Individual Lab Report 06

Name: Sida Wang  
Group Name: Group G, RoboGrapher  
Teammates: Tiffany May, Rohit Dashrathy,  
Jimit Gandhi, Gauri Gandhi

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## 1. Individual Progress

### 1.1 Updated License for Intraface

As the previous license for Intraface was 3-month long, and it has expired this semester. So I updated the license for Intraface with a 1-year new license, which may guarantee that it will not expire till we finish this project.

### 1.2 Created a ROS Node for Happiness Percentage Detection

In order to find out the happiness percentage of a person instead of all the facial expressions of a person, I extracted only the happiness expression from Intraface.

And I set a value to differentiate whether a person is smile or not. If the percentage of smiling is larger than 0.5, I assume the person is smiling, otherwise the person is not smiling. So I created a ROS node to extract the happiness percentage and to judge if the person is smiling.

Figure 1 is the relationship in the system of smile percentage detection. The usb\_cam publishes image\_raw data to Intraface, and then Intraface can extract facial expressions (emotions array) and publishes to smilePercentage node.

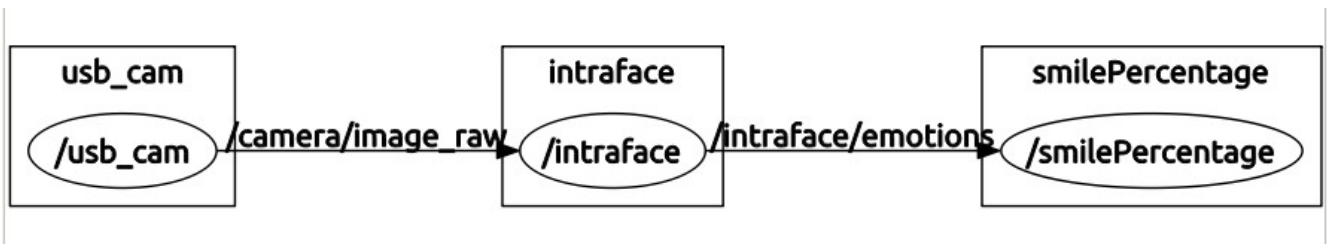


Figure 1: rqt\_graph for smile detection

The result of the smile percentage detection is shown in Figure 2 and 3. Figure 2 shows the result of the person is not smiling, and Figure 3 show the

person who is smiling.

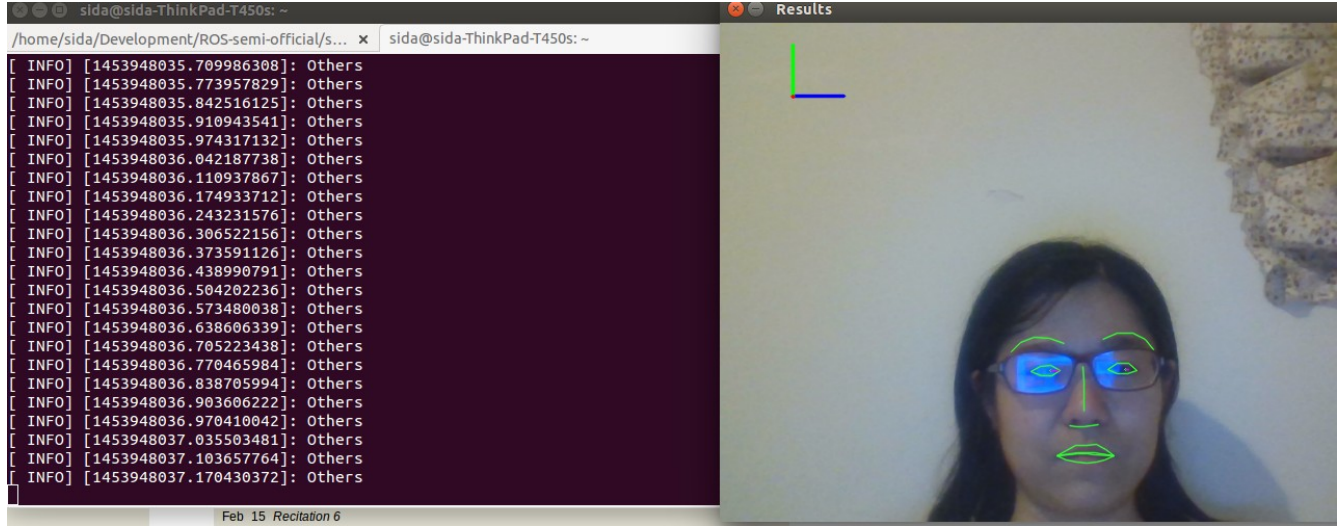


Figure 2: Not smiling

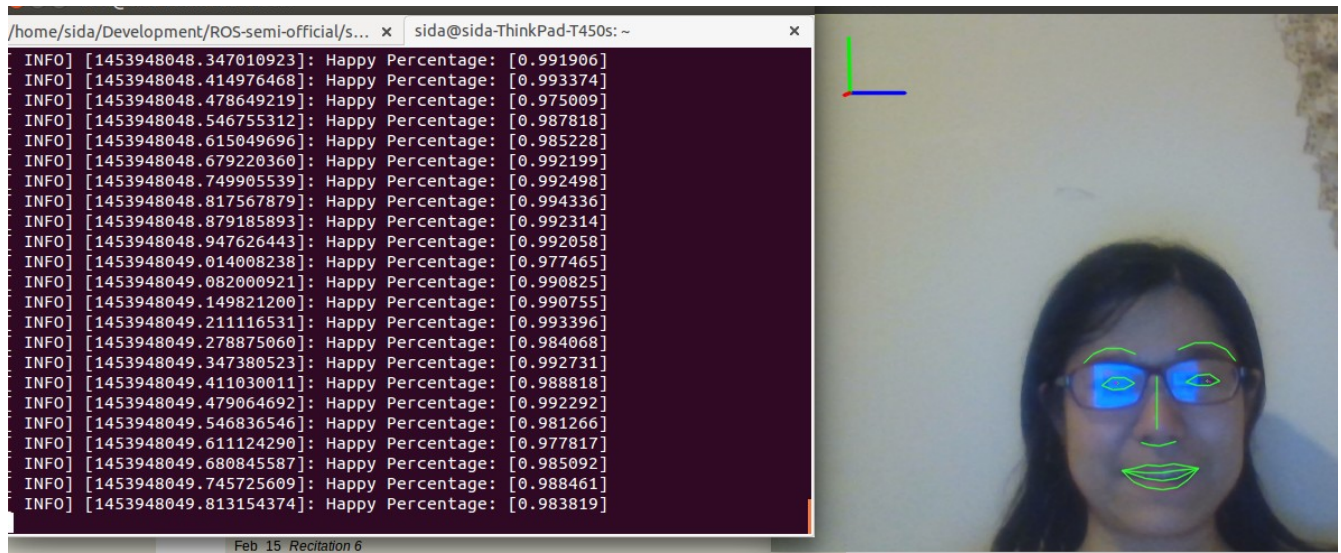


Figure 3: Smiling Percentage Detection

This smiling percentage detection is used for photo clicking. For photo clicking, only if the person is smiling more than 2s, and then we will take the photo.

## 2. Challenges

### 2.1 How to guarantee that the photo is clicked after steady smiling

In order to make sure that the photo is clicked after continuous smiling instead of a sudden smiling, I have tried several methods to solve this

problem. And I talked with Jimit and he thought about a good idea that after the human is detected to be smiling and sleep() for 2 second, if the person is still smiling, then we determine that he or she is smiling.

### **3. Team Work**

Jimit was working on photo clicking part of our subsystem. After detecting the person has been smiling for 2 seconds, then a photo will automatically clicked and saved to a specific position in the master computer.

Gauri was working on integration of the subsystems. She merges our Intraface nodes to navigation system, so that our system is a integrated system of both navigation and Intraface.

Rohit was working on planning a new laptop for master computer of Turtlebots. As our master computer is very old and the processing speed of data is not quick enough to detect human facial expression real time, so Rohit compared different kinds of laptops and have ordered a new one.

Tiffany: Tiffany worked on integration of ROS, Intraface and Arduino. She tried to make a node that can send data to arduino from Intraface through ROS, so that we do not have to open Arduino API each time.

### **4. Future Plan**

We plan to work on multi-robot navigation system. At the beginning, we plan to use 3 robots for our system. This part may contain path planning, navigation, obstacle avoidance, and collision avoidance.