Multi touch support implementation in Pharo

François Lepan
Benjamin Van Ryseghem

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Introduction

During our project our main goal was to introduce a new way to handle multi touch events and gestures in Pharo. Starting from what we previously did last semester during the PJE lecture and using the same approach, we introduce a handling of gestures based on TUIO with an architecture allowing to switch to virtual machine events.

In order to analyse these gestures we needed a state machine that would fill the gap between the human gesture and a perfect gesture. This state machine has been improved as we were adding new gestures to fit as much as possible the gestures performed by the user.

Another goal was to clean and reunify the whole hierarchy of system events and to provide a clean abstraction of low level data structure.

Table des matières

1 TUOI and blobs analysis

Our first goal is to be able to retrieve gestures from the user. In order to do we used TUIO which is a protocol for multitouch events. It retrieves the multi-touch gestures from the hardware and then generates events for each finger on the device (*cf* Fig. 1). For our tests we used a software called Tongseng that generate TUIO events from the Mac trackpad and a library created by our tutor that parses the TUIO events.

2 System events hierarchy

3 Switching to VM events

4 State machine limits

5 Gesture implementation

6 Conclusion

7 Appendices

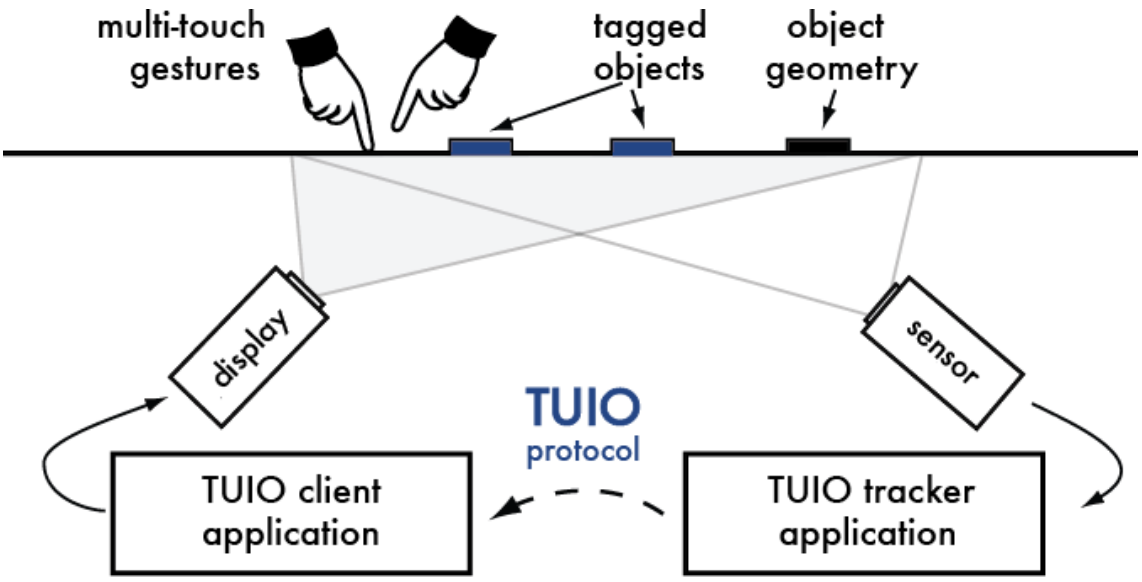

Figure 1 – Diagram of the TUIO protocol