JunctionBox for Android

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Linux Audio Conference 2012
CCRMA
Related Work
reacTable
Lemur
TouchOSC
JunctionBox
Goal

Make development of multi-touch sound control applications easier while still allowing a high degree of customization.
JunctionBox, the Name

**Junction**: a place or point where two or more things meet or converge.
What Converges at a Junction?

1. Touch interaction
2. Visual feedback
3. Sound control
Original JunctionBox

TUION Tracker  →  TUION  →  JunctionBox  →  JavaOSC  →  Sound Engine

JunctionBox

TUION Java

Processing Output
And the Box?

Box = Total interactive area of device
Junction in the Box

- Outside
- Inside

Box Height

Box Width

Junction Width

Junction Height
How a Junction Becomes Visible

Junction j

rect(j.centerX(),
    j.centerY(),
    j.getWidth(),
    j.getHeight());

Junction j

ellipse(j.centerX(),
    j.centerY(),
    j.getWidth(),
    j.getHeight());
CCRMA Summer Workshop 2010
JunctionBox for Android
Why Android?

1. JunctionBox was written in Java

2. Android tablets are portable and easily available
Android Audio
JunctionBox for Android

Android Tablet -> JunctionBox -> OSC

JunctionBox -> Processing Output -> Sound Engine
JunctionBox Internals

MotionEvent

Dispatcher

Contact

Action

Relay

Junction

JunctionBox

OSC

Sound Engine
Contact

Contact = Touch
boolean dispatchTouchEvent(MotionEvent ev) {
    dispatcher.handleMotionEvent(ev);
    return true;
}
Latency
Processing Event Queues

Event Queues

Frames
JunctionBox Touch Events

Touch Events

Frames

OSC

OSC

OSC

OSC
Mapping
Actions

- **ROTATE**
- **SCALE**
- **TRANSLATE_X**
- **TRANSLATE_Y**
Mapping Actions to Messages

For a Junction j:

j.mapMessage(Action.TRANSLATE_Y, 
        "/example/message");
Contact Mapping for Ellipses
## Actions

<table>
<thead>
<tr>
<th>Action</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVE</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>TOGGLE</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>ROTATE</td>
<td>0-1</td>
<td>0</td>
<td>2*Pi</td>
</tr>
<tr>
<td>SCALE</td>
<td>0-1</td>
<td>1</td>
<td>Box width/Box height</td>
</tr>
<tr>
<td>SCALE_WIDTH</td>
<td>0-1</td>
<td>1</td>
<td>Box width</td>
</tr>
<tr>
<td>SCALE_HEIGHT</td>
<td>0-1</td>
<td>1</td>
<td>Box height</td>
</tr>
<tr>
<td>TRANSLATE_X</td>
<td>0-1</td>
<td>0</td>
<td>Box width</td>
</tr>
<tr>
<td>TRANSLATE_Y</td>
<td>0-1</td>
<td>0</td>
<td>Box height</td>
</tr>
<tr>
<td>TRANSLATE_XY</td>
<td>0-1</td>
<td>0</td>
<td>Box width, Box height</td>
</tr>
<tr>
<td>CONTACT_X</td>
<td>0-1</td>
<td>0</td>
<td>Junction width</td>
</tr>
<tr>
<td>CONTACT_Y</td>
<td>0-1</td>
<td>0</td>
<td>Junction height</td>
</tr>
<tr>
<td>CONTACT_R</td>
<td>0-1</td>
<td>0</td>
<td>Junction radius</td>
</tr>
<tr>
<td>CONTACT_COUNT</td>
<td>0-n</td>
<td>0</td>
<td>n</td>
</tr>
<tr>
<td>ROTATION_COUNT</td>
<td>-n - n</td>
<td>-n</td>
<td>n</td>
</tr>
</tbody>
</table>
Orrerator
CCRMA Summer Workshop!

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Lawrence Fyfe and Adam Tindale
Thanks!

Adam Tindale
Sheelagh Carpendale
CCRMA
The Linux Audio Conference