

GISpL: Gestures Made Easy

Introducing the *Gestural Interface Specification Language*



Florian Ehtler

Siemens Corporate Technology
Munich Univ. of Applied Sciences

Andreas Butz

Ludwig-Maximilians-Universität München

SIEMENS
Corporate Technology

Philosophical question: what is a gesture?

*„A motion of the limbs or body,
especially one made to emphasize speech.“*



*„A motion of the limbs or body,
performed to trigger an action.“*

Gestures are not only ...

multi-touch *or* shapes *or* body-tracking *or* ...

What do they have in common?

Related Work

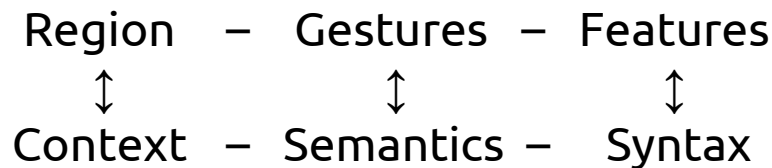
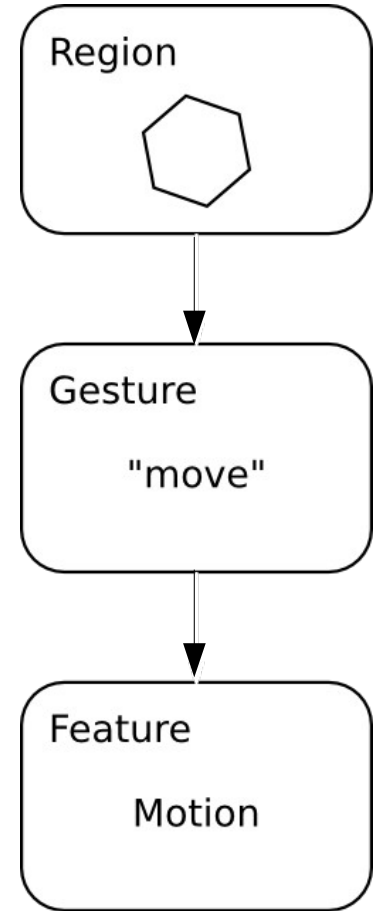
- Tangible interfaces
 - *Phidgets* (S. Greenberg et al., 2001)
 - *Papier-mâché* (S. Klemmer et al., 2004)
- Sketch/shape recognition
 - *LADDER* (T. Hammond et al., 2005)
- Multi-Touch
 - *Towards a formalization of MT gestures* (D. Kammer et al., 2010)
 - *MIDAS* (C. Scholliers et al., 2011)
- Multi-modal interaction
 - *OpenInterface* (M. Serrano et al., 2008)

Developer's Questions

- What do all these modalities have in common?
- Is there an unified view on them?

Core concepts for unified approach:

- Regions: spatial areas containing gesture sets
- Gestures: representations for user actions
- Features: „atomic” building blocks for gestures



Available Features

- Motion
 - Rotation
 - Scale
- } multitouch-inspired
- Count
 - Delay
 - Path
- } strokes/shapes
- ID
 - ParentID
 - Group
- } tangibles, whole-body interaction
- Position
 - Dimensions
- } position & object shape

Putting It Together: GISpL

```
{
  "name": "two_finger_swipe",
  "flags": "oneshot",
  "features": [
    {
      "type": "Count",
      "filters": 2046,
      "constraints": [2, 2],
      "result": []
    }, {
      "type": "Motion",
      "filters": 2046,
      "constraints": [[0.1, -0.1, -0.1], [0.1, 0.01, 0.01]],
      "result": []
    }
  ]
}
```

JSON format – universally readable

flags: gesture modifiers
oneshot → triggered only once
default → stored as reusable definition
sticky → „sticks“ to starting region

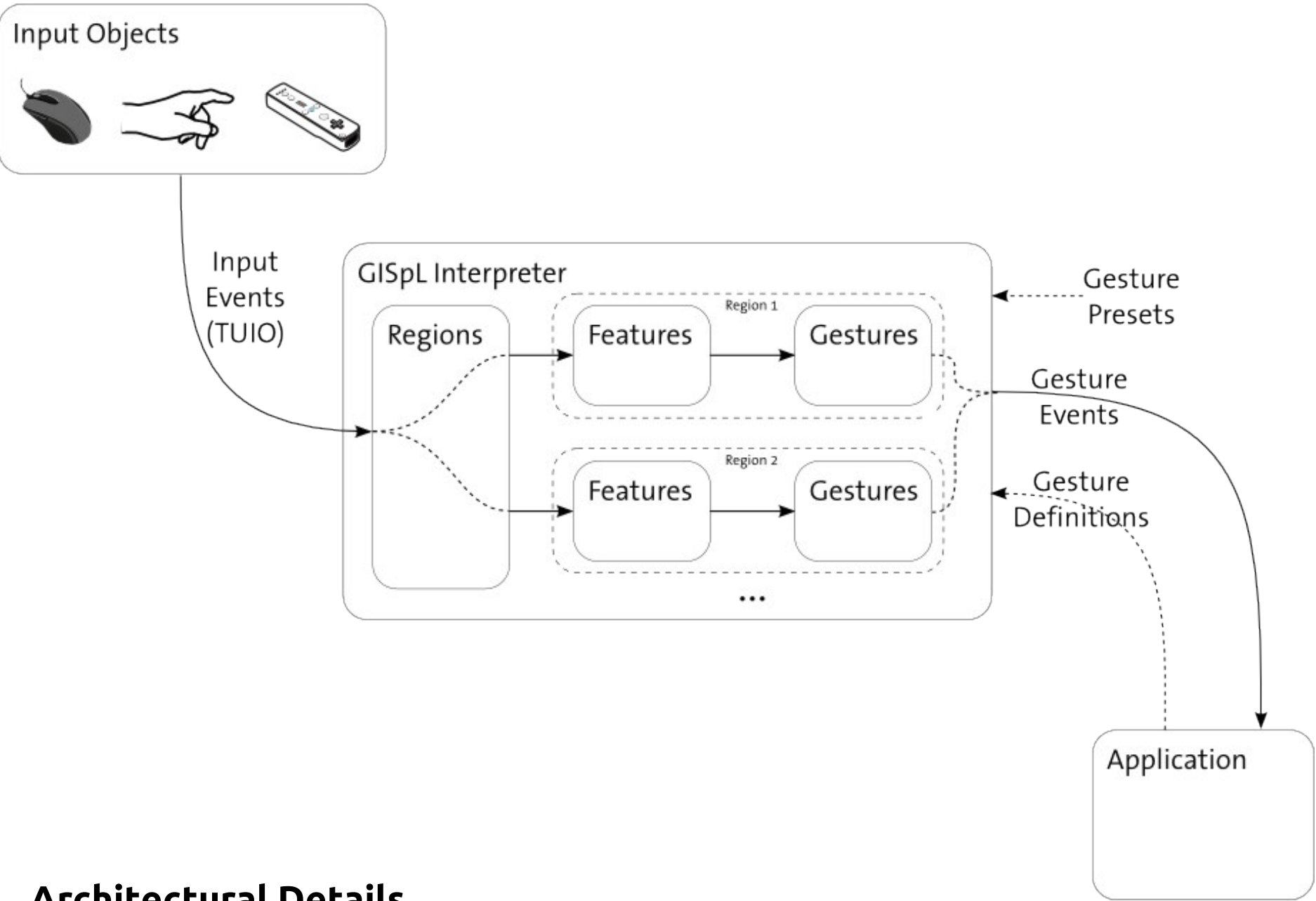
filters: bitmask for TUIO 2.0 types
b1111111110 = all fingers

constraints: limits for feature values

Thanks for listening!

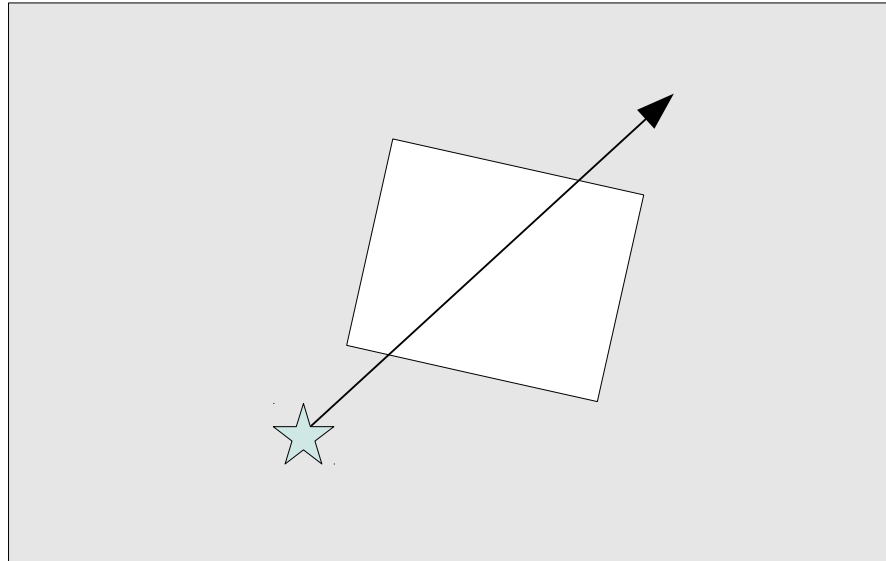
Questions and comments are welcome!

Visit <http://www.gispl.org/> for
full spec. & C++ reference code.



Architectural Details

- Problem: gestures defined on, e.g., screen background
- Intended for smaller sub-regions
- Example: strike-through gesture



- Possible solution: „ubiquitous“ flag
- Gesture will be delivered to all participating regions

Extension: „ubiquitous“ gestures