Defining Gestures from Optical Flow: Week 7

Jon Harter

University of Central Florida

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Current Progress and Goals

Recent Progress

➤ Created a new modification of Longuet-Higgins egomotion equations to use in multiple camera systems

Current Goal: Create a working gesture recognition system

➤ Model optical flow data consistent with camera system
➤ Determine egomotion combinations that are not possible or likely with camera system
➤ Define specific gestures
Generated Optical Flow - Rotation about z-axis

Figure: Optical Flow from Multi-camera equations (Longuet-Higgins equations modified)
Generated Optical Flow - Translation in positive x direction

Figure: Optical Flow from Multi-camera equations (Longuet-Higgins equations modified)
System Model

Figure: Convention when defining gestures and system
Generated Optical Flow - Thrust ($y$ translation)

Figure: Optical Flow from Multi-camera equations (Longuet-Higgins equations modified)
Calculated Optical Flow - Thrust (y translation)

Figure: Optical flow from video
Eliminate Unlikely Egomotion

**Figure:** One Example of Unlikely Motion
Future Plans

- Create a space of likely egomotion parameters of which to map optical flow data
- Strictly define a set of gestures (thrust, wave, twist...)
- Construct a model for gesture recognition that is resilient to variation and noise