Phillip Napieralski

REU
WEEK 7 PRESENTATION

The problem

- How do we accurately detect ego-motion using optical flow?
- What can we do now that we know how the camera has moved?
- How do we recognize gestures with the device?

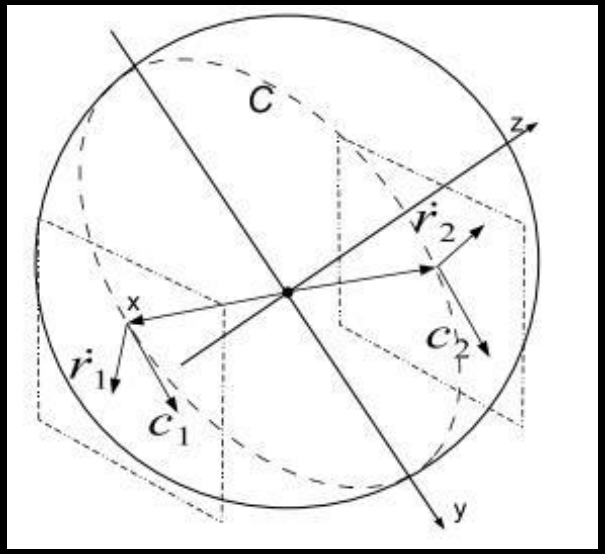
The literature

- Specifying Gestures by Example – Dean Rubine
- Directions of Egomotion from Antipodal Points - John Lim and Nick Barnes
- Estimation of the Epipole using Optical Flow at Antipodal Points - John Lim and Nick Barnes (ANU)

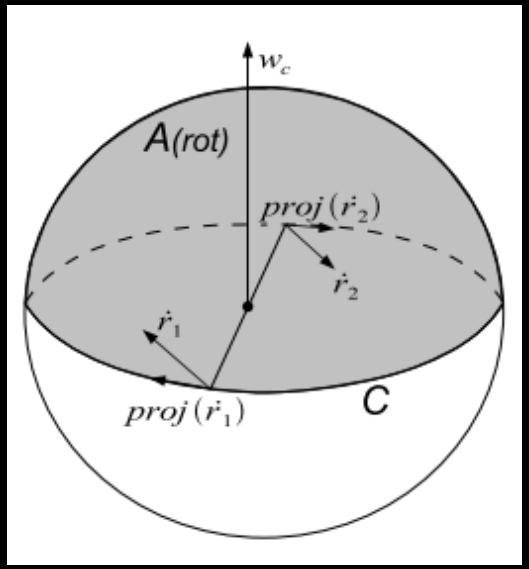
Rubine's Classifer

- We are given a series of R and T
- Choose features
  - We have 36 feature candidates
  - Eg. Total rotation, mean rotation, mean translation, etc…
- Now given the features, train using linear discriminator and test it
  - A caveat: requires pressing a button before gesture
- Utilize time-window approach from "Accelerometer-based User Interfaces for the Control of a Physically Simulated Character" by Takaaki Shiratori and Jessica Hogkins (CMU)

Antipodes



=>

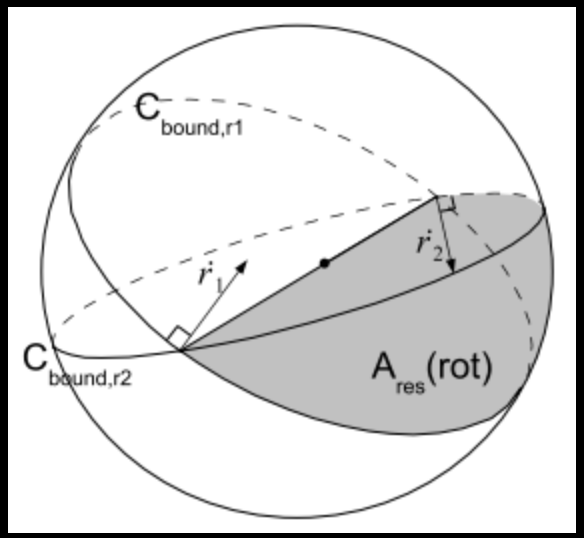


- Consider an image sphere

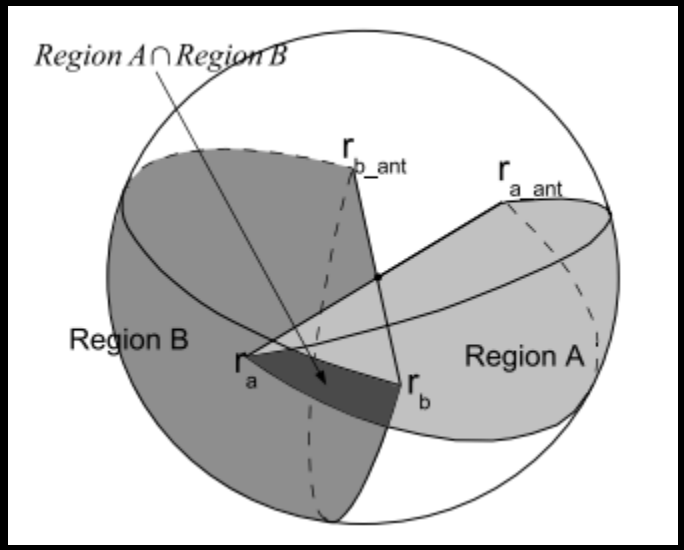
From Lim and Barnes

Antipodes

=>



=>



- Simple model
- Recovers direction only
- Instantaneous

From Lim and Barnes

The future

- Match patterns in our gestures to synthetic data
- Consider antipodes
- Finish the classifier

Questions?


Ambiguity
Enchantment
Whenever a player plays a spell that counters a spell that has been played or a player plays a spell that comes into play with counters, that player may counter the next spell played or put an additional counter on a permanent that has already been played, but not countered.
Stephen Daniele