

CSE 165: 3D User Interaction

Lecture #9: Travel

Announcements

- Homework Assignment #3
 - Due next Friday at 2pm
 - Discussion Monday at 6pm

Navigation

Wayfinding – Cognitive Component

Travel – Motor Component

Travel

- The motor component of navigation
 - Good travel techniques integrate aids to wayfinding
- Movement between two locations, setting the position (and orientation) of the user's viewpoint
- The most basic and common VE interaction technique, used in almost any large-scale VE

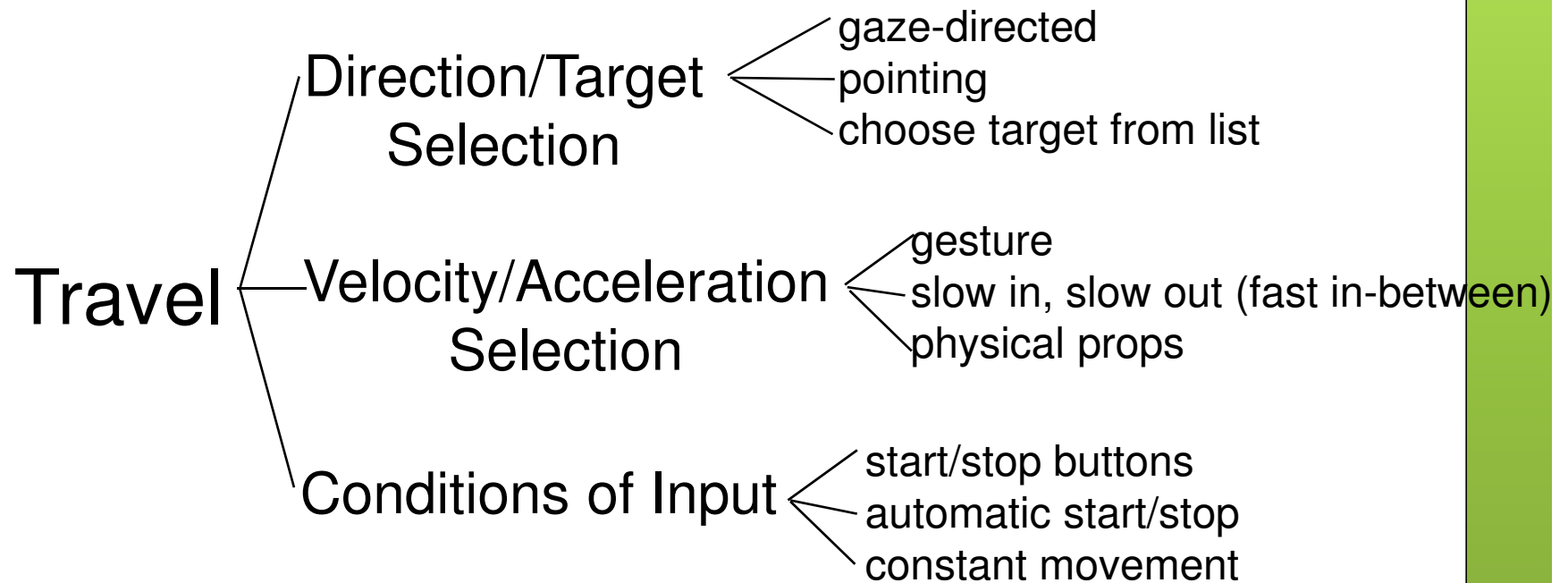
Travel Tasks

- Exploration
 - travel which has no specific target
 - build knowledge of environment
- Search
 - naïve: travel to find a target whose position is not known
 - primed: travel to a target whose position is known
 - build layout knowledge; move to task location
- Maneuvering
 - travel to position viewpoint for task
 - short, precise movements

Travel Characteristics

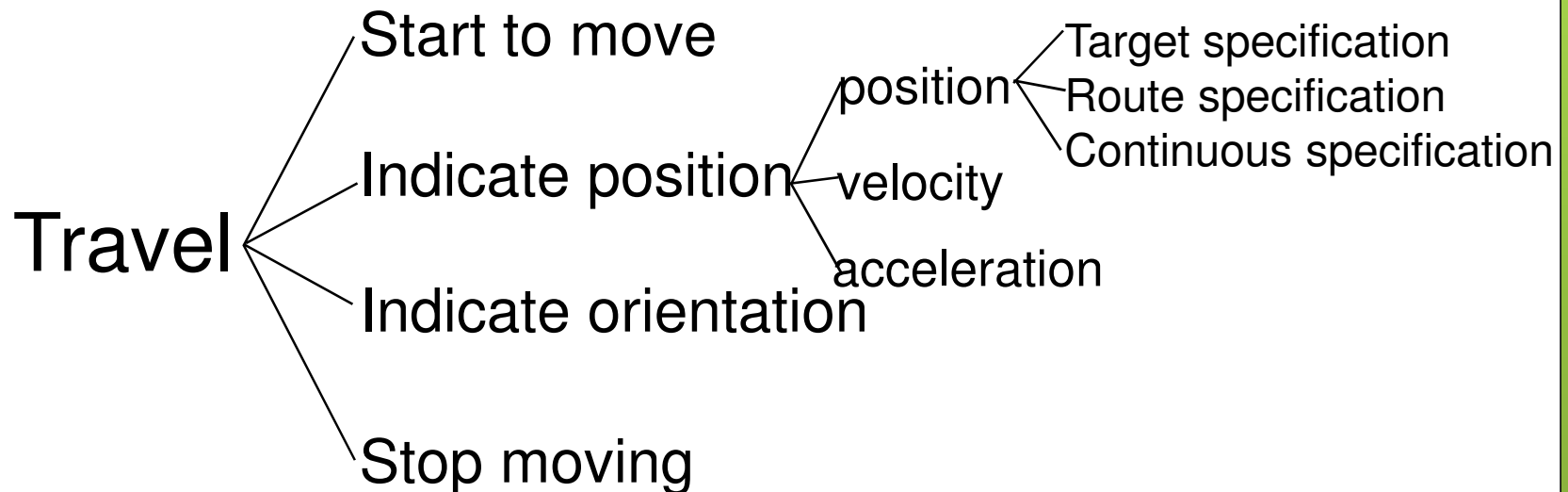
- Travel distance
- Amount of curvature/number of turns in path
- Target visibility
- DOF required
- Accuracy required
- Other tasks during travel
- Active vs. passive
- Physical vs. virtual

A Technique Classification – Component Decomposition



From: Bowman, Koller, and Hodges, Travel in Immersive Virtual Environments. IEEE VRAIS '97

Alternate Technique Classification – User Control Level



Travel Techniques

- Physical locomotion (“natural” metaphors)
- Steering techniques
- Route planning
- Target-based techniques
- Manual manipulation
- Viewpoint orientation techniques

Physical Locomotion Techniques

- Walking techniques
 - Large-scale tracking
 - Walking in place
- Treadmills
 - single-direction with steering (Gait Master)
 - omni-directional
- Bicycles
- Other physical motion techniques
 - Magic carpet
 - Disney's river raft ride



Large Scale Tracking



Omni-Directional Treadmill

- Video:
 - http://www.youtube.com/watch?v=BQw1t_sgrJOs



Omni

- <https://www.kickstarter.com/projects/1944625487/omni-move-naturally-in-your-favorite-game>

