

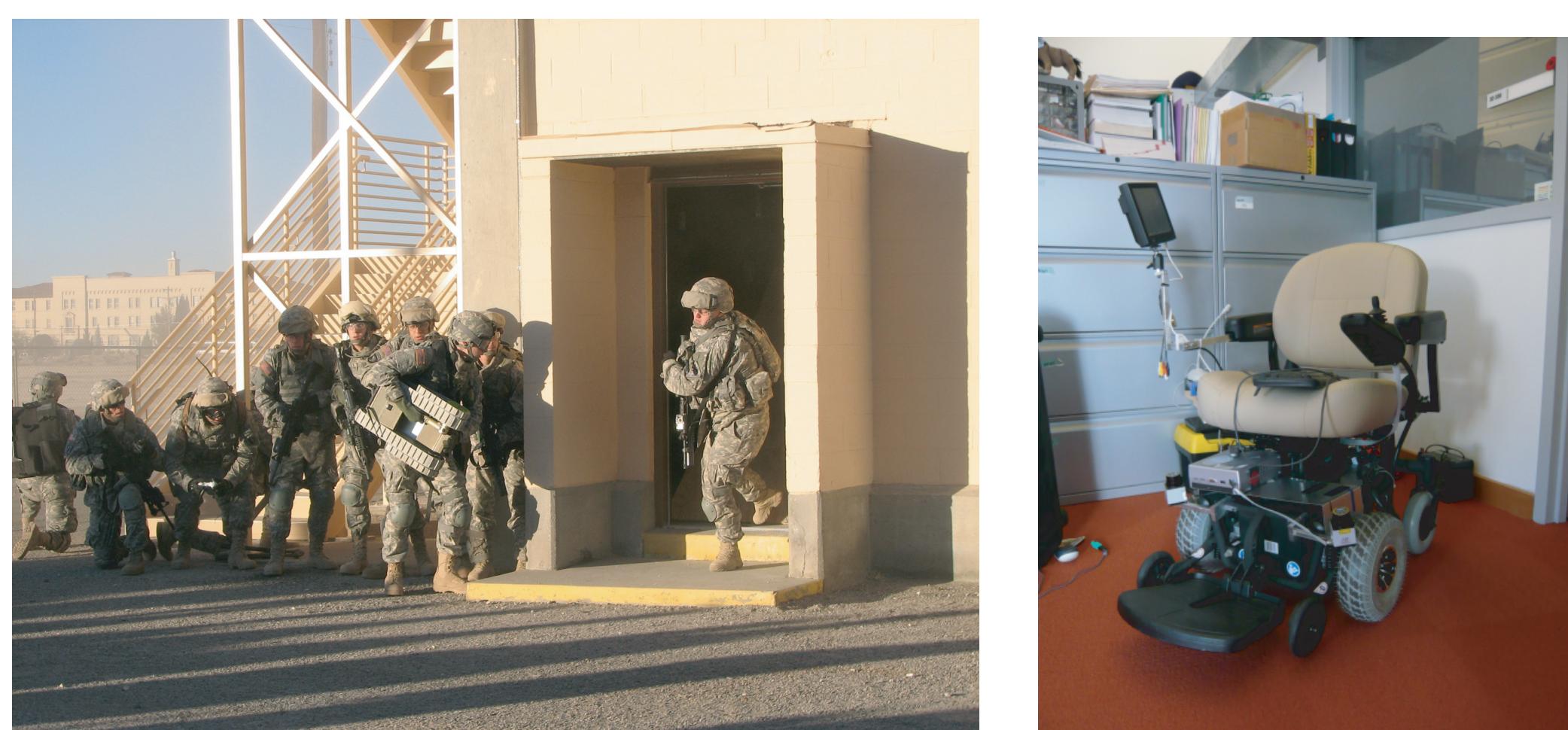
Vision-based Navigation for Humans

Olivier Koch, Seth Teller {koch,teller}@csail.mit.edu

Goal: build a vision-based platform to assist humans navigating GPS-denied environments.

Applications

Visually impaired / Disabled people
Soldiers in the field



Body-worn platform

6 IEEE Firewire cameras / 360° FOV
Processing rate: 2Hz
PDA / User Interface / Autonomy: 3h



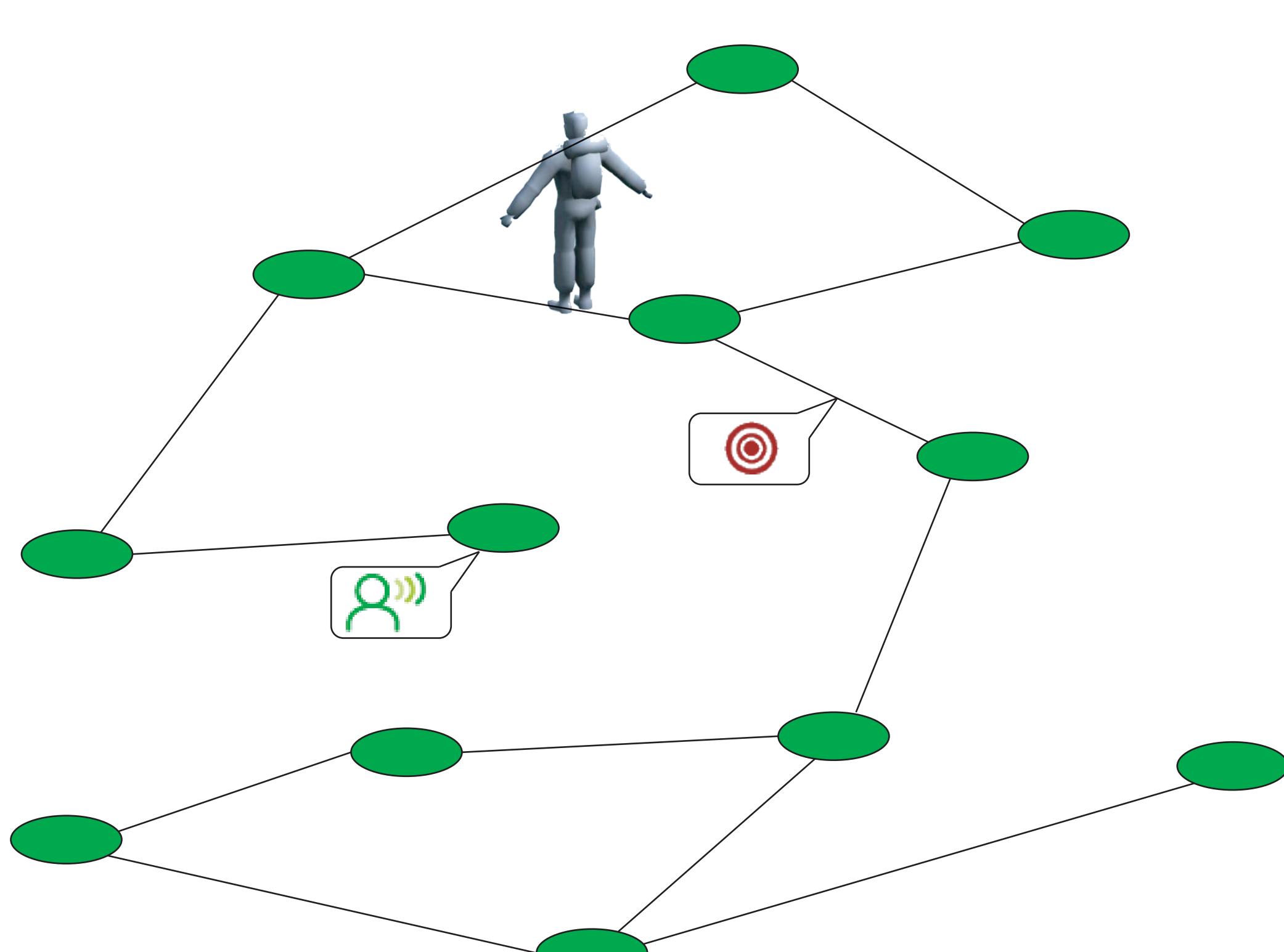
Topological Map

Automatic map generation
Situational awareness

- Spoken information
- Object tagging

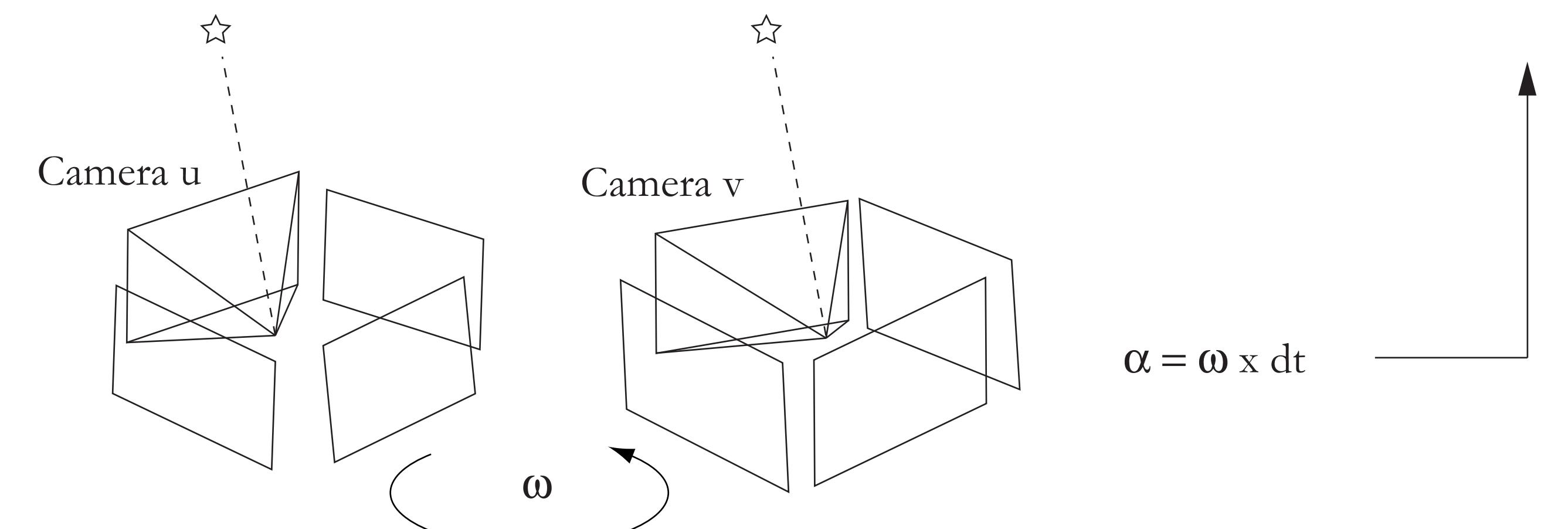
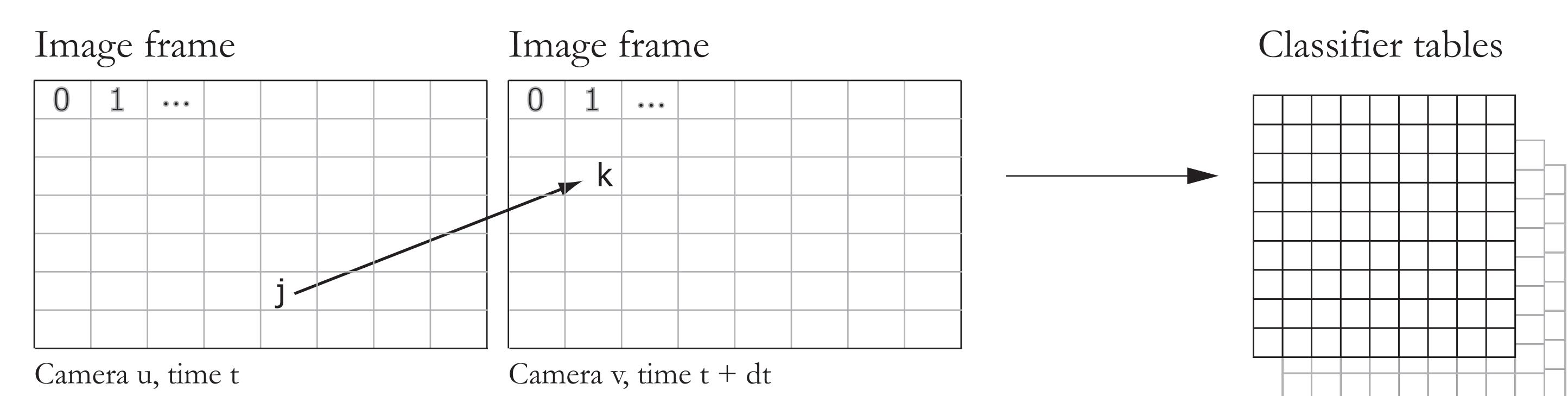
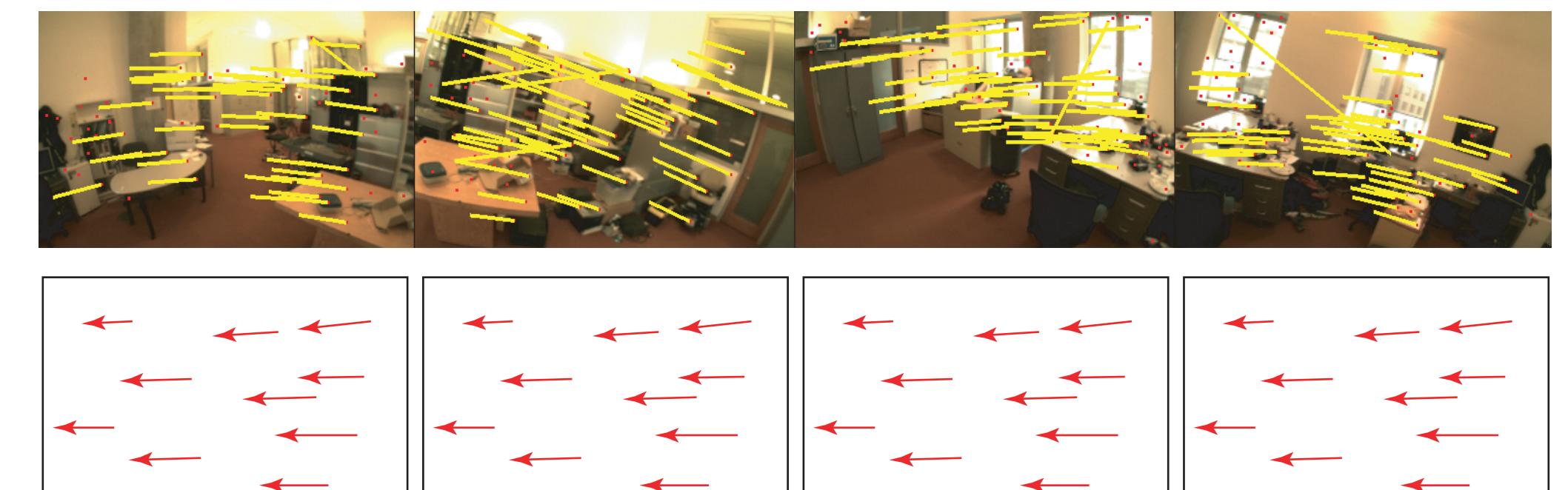
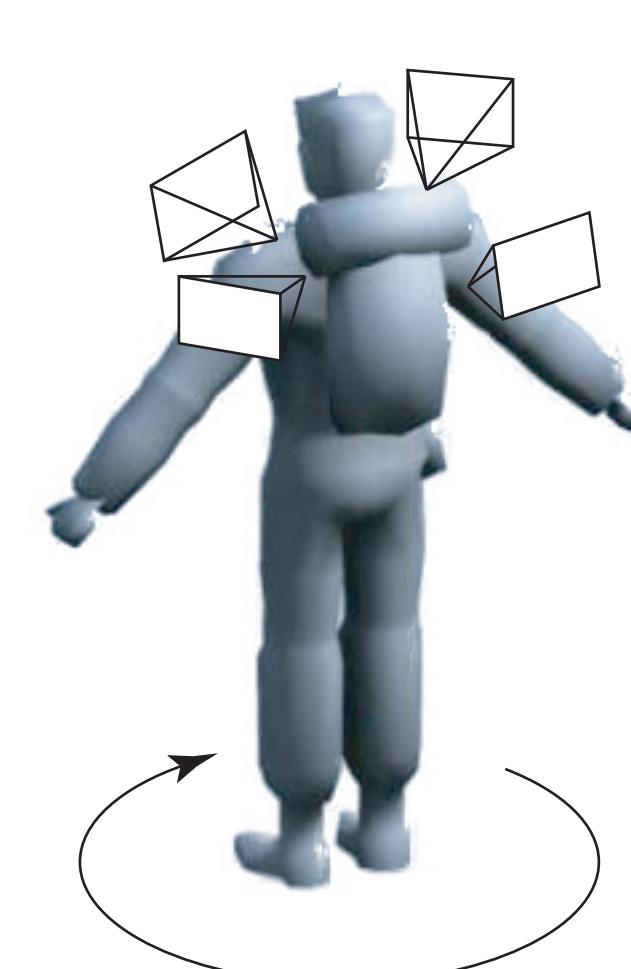
Navigation assistance

- Homing / Rescue / Node-to-node



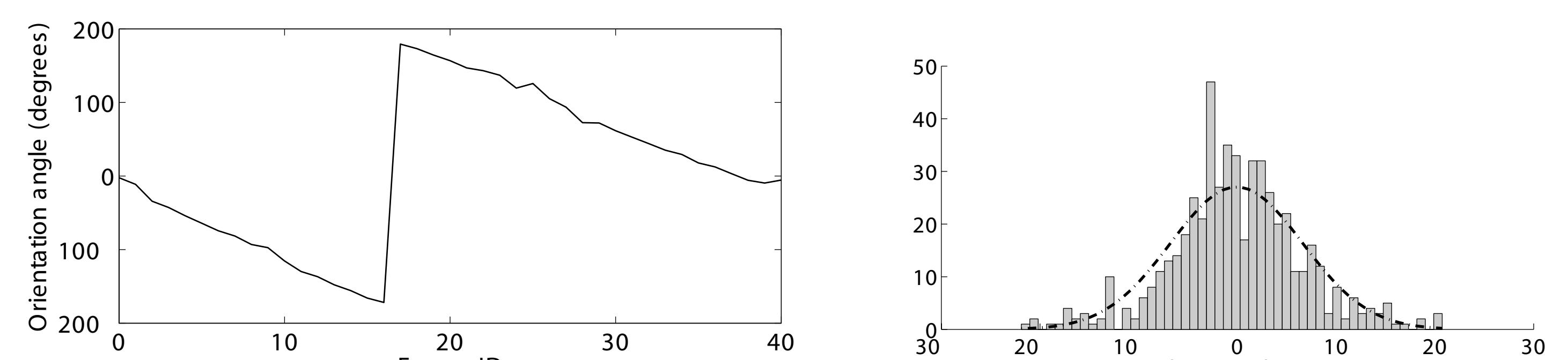
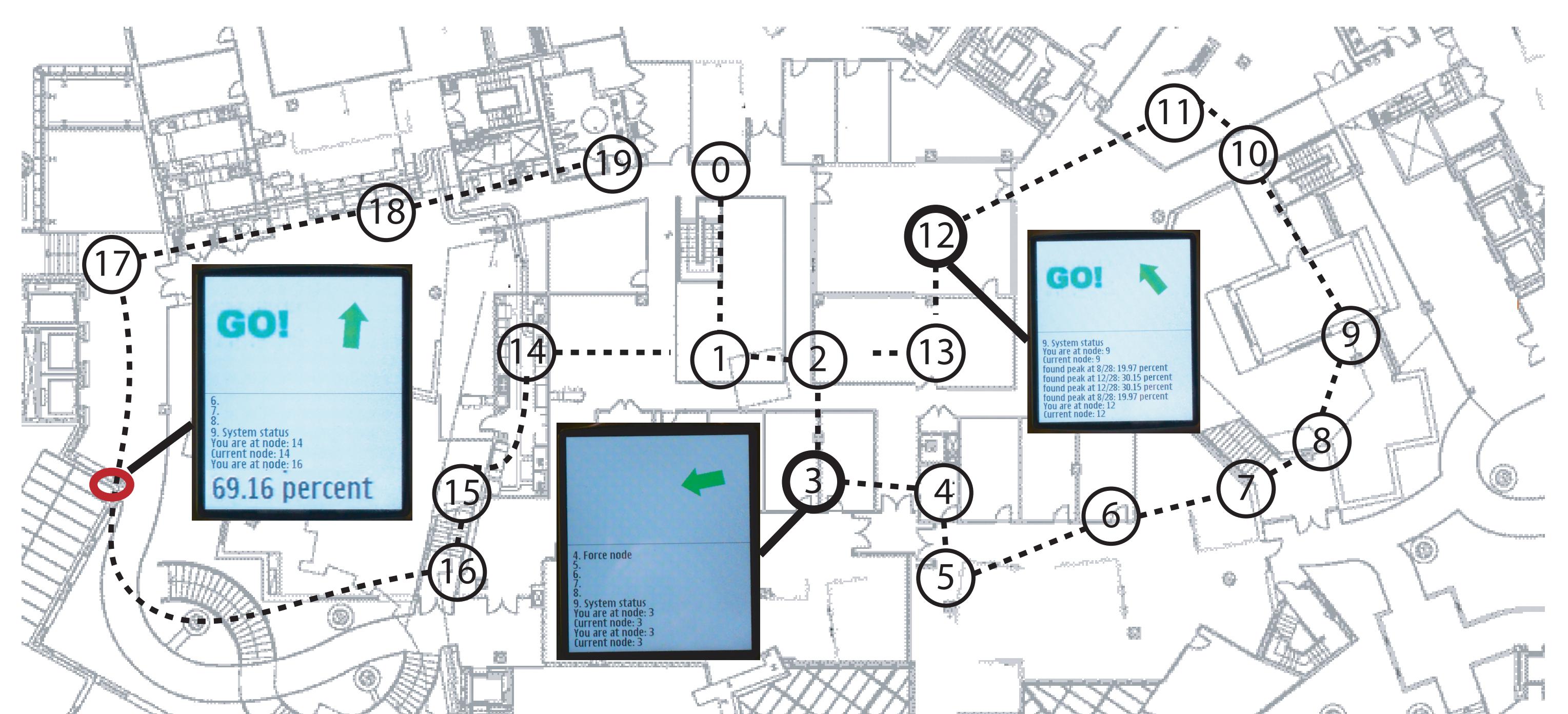
Motion Learning

Learn correlation between user motion and motion field



Real-life experiment

25 min exploration in cluttered environment
Rotation error: 7 degrees



Acknowledgement

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