A self-calibrating vision-based navigation assistant

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Motivation

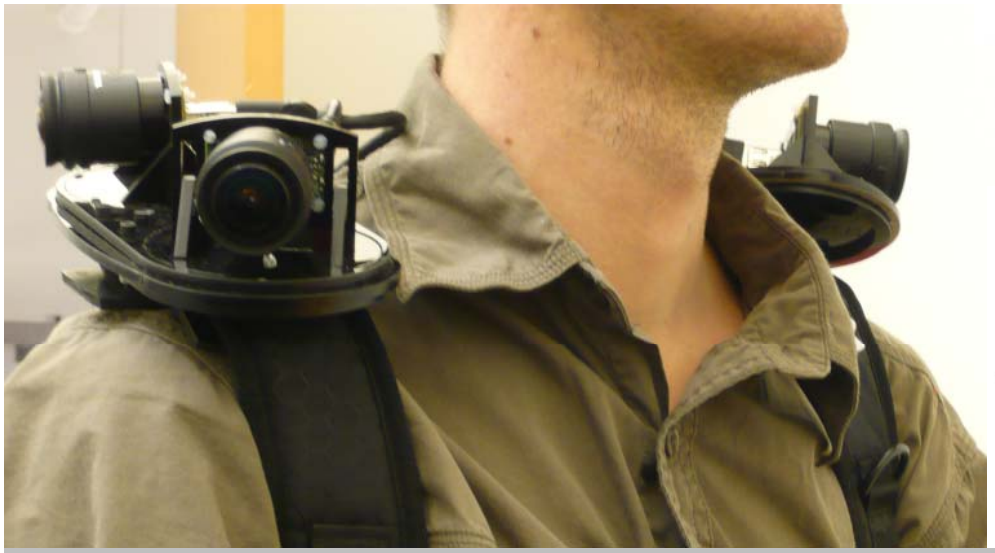
- Assist humans in exploring GPS-denied environments (indoor / dense urban)

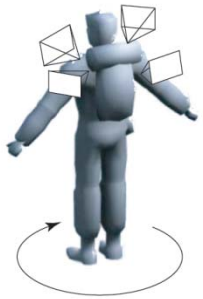
Method Overview

- Topological Mapping
- Online Node Estimation
- Human-oriented guidance
- "Visual Motion learning"

Contributions

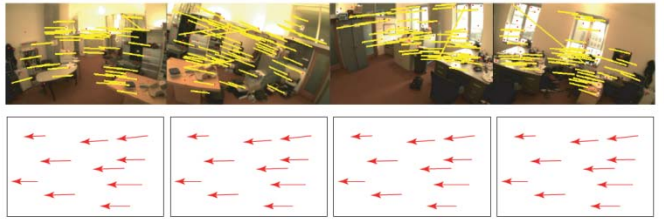
- Purely vision-based
- No metric mapping
- Guidance in user's body frame
- Uncalibrated cameras
- Robust to off-path trajectories





System Overview

- 4 uncalibrated cameras
- FOV: 360° x 90°



A Self-Calibrating Vision-based Navigation Assistant, Olivier Koch, Seth Teller, **ECCV** *Workshop on Computer Vision Applications to the Visually Impaired*, **2008**

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