

C. FENG, V.R. KAMAT. **A plane tracker for AEC-automation applications.** *Gerontechnology 2012; 11(2):83; doi:10.4017/gt.2012.11.02.327.00* **Purpose** We propose a new registration algorithm and computing framework, the keg tracker, for estimating a camera's position and orientation for a general class of mobile context-aware applications¹ in architecture, engineering, and construction (AEC). **Method** By studying two classic types of natural marker-based registration algorithms, homography-from-detection² and homography-from-tracking, and overcoming their specific limitations of jitter and drift, our method applies two global constraints (geometric and appearance) to prevent tracking errors from propagating between consecutive frames. **Results & Discussion** The proposed method is able to achieve an increase in both stability and accuracy, while being fast enough for real-time applications. Experiments on both synthesized and real-world test cases demonstrate that our method is superior to existing state-of-the-art registration algorithms² (Figure 1 top). The paper also explores several AEC-applications of our method in context-aware computing (Figure 1 bottom) and desktop augmented reality.

References

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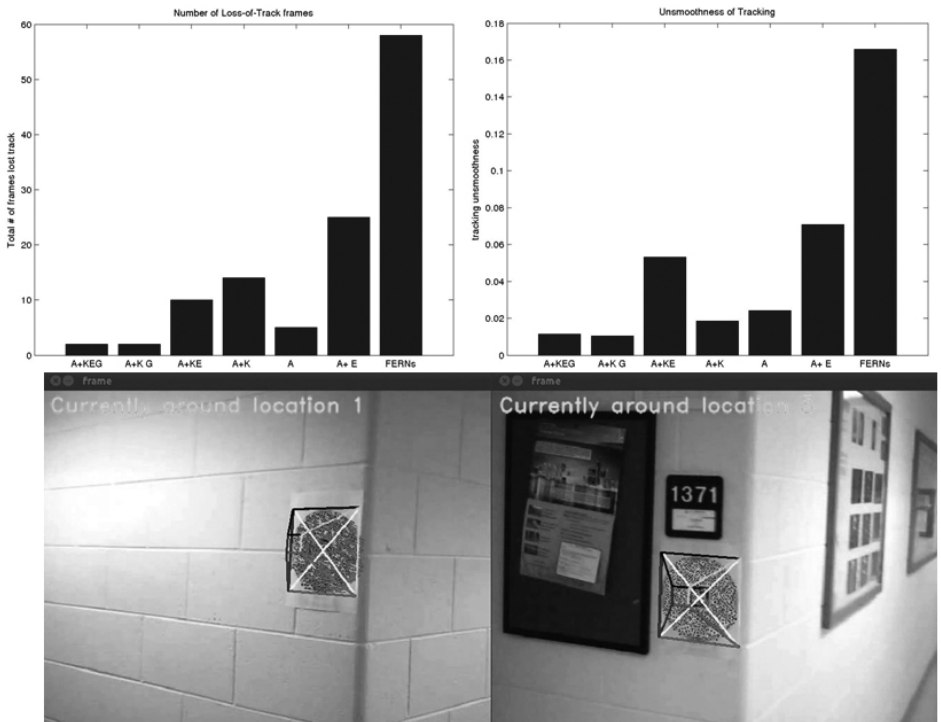


Figure 1. Top-left: Number of loss-of-track frames; Top-right: Unsmoothness of tracking; Left-most bar shows that our method outperforms existing state-of-the-art methods (right-most bar); Bottom: Application in context-aware computing.