# Introduction

## Visible Light Localization: LoS propagation: robust, multipath-free

Densely deployed landmarks: high accuracy Existing works show 10cm to 1m accuracy

However, LED beacons needs extra circuits! • Adds to manufacturing cost • Huge retrofitting effort

## LiTell:

visible light localization with unmodified fluorescent light fixtures

Landmarks: incumbent fluorescent lights Sensors: smartphone cameras

## Zero retrofitting cost!





## LiTell: Indoor Localization Using **Unmodified Light Fixtures** University of Wisconsin-Madison Chi Zhang, Xinyu Zhang







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# Match pairs of CFs to pairs of lights, lower

## Achieve high localization accuracy (0.2m to 0.5m) by utilizing camera geometry.



# Evaluation

### Immune to ambient light

- Unaffected by user behavior
- 90.3% light identification accuracy
- **10cm/25cm** localization accuracy

Saves 50m-70m travel distance, over 50% time