

# New View Synthesis from Omnidirectional Video Images Acquired in Outdoor Environments

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## Motivation



Telepresence System using Real Images

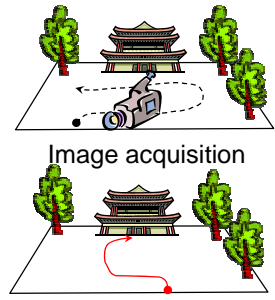
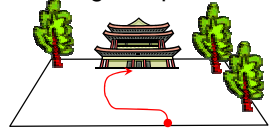


Image acquisition



Virtual view change

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## Relation to COE Program

### Guide System Using Real Images

In a target place

From a remote site



AR Guide System



Telepresence System

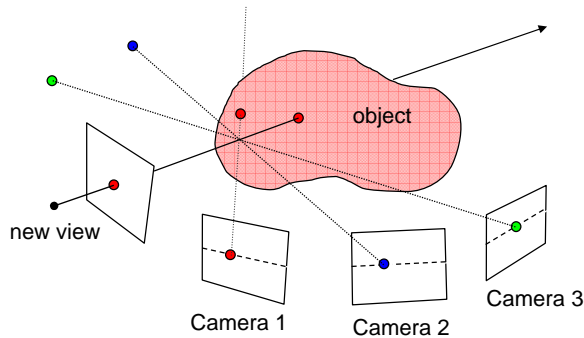
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## Early Studies - New View Synthesis

- Outdoor Environments
  - D. Kotake et al. ('99)  
Layering + **Morphing**
  - H. Kawasaki et al. ('01)  
3D reconstruction + **Light field rendering**
- Desktop Environments
  - M. Irani et al. ('02)
  - A. Fitzgibbon et al. ('03)

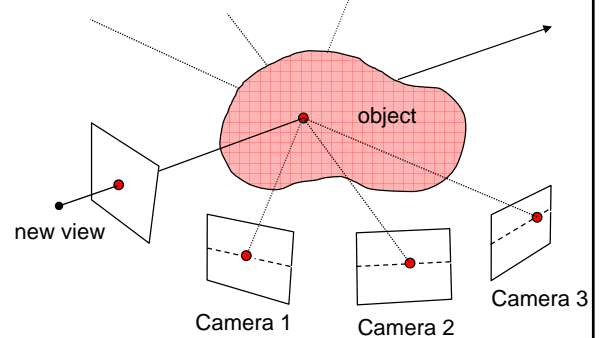
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## Irani's Method



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## Irani's Method



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## Requirements in Irani's Method

- High image acquisition cost  
The whole object must be included in all the frames.
- High calculation cost
- Camera motion parameters

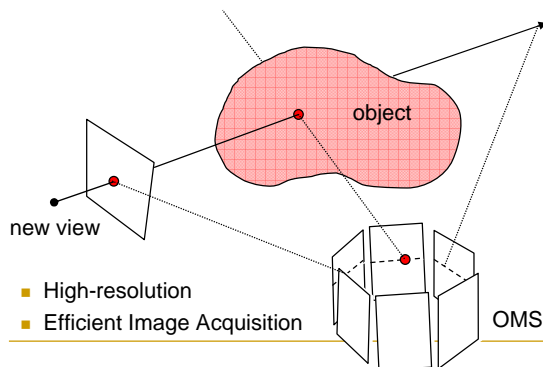
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## Objective & Approach

- Objective:** Develop a **New View Synthesis Method** for **Outdoor Scenes**  
Reduce Image Acquisition Cost
- Approach:** **Extending Irani's Method**  
Omnidirectional Multi-camera System (OMS)

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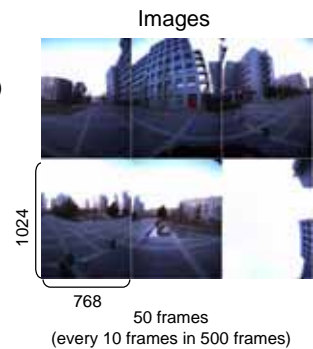
## Extending Irani's Method for OMS



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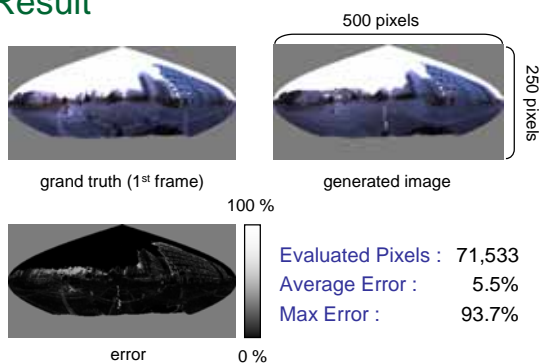
## Experiment

- Input frames :**  
499 frames (2<sup>nd</sup> ~ 500<sup>th</sup>)
- New View Point :**  
1<sup>st</sup> frame
- Camera Parameters :**  
estimated from 500 frames



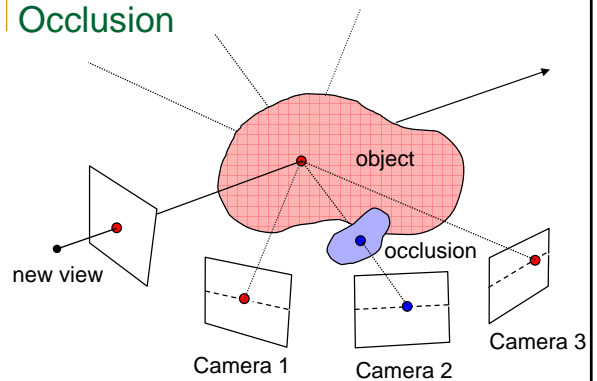
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## Result



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## Occlusion



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## Summary

**Proposed:** New View synthesis Method for Outdoor Scenes

- ❑ Reducing Image Acquisition Cost
- ❑ Not Occurring Geometrical Distortion

**Approach**

using Omnidirectional Multi-camera System (OMS)

**Result**

- ❑ An new view image can be generated.
- ❑ Oclusions should be considered.