

# Project Presentation – Week 4

By: Joshua Michalczak, 10 June 2010

For: Computer Vision R.E.U. at University of Central Florida

# Topic Overview

- Structure from motion
  - Derive a scene's 3D nature from a series of 2D observations
  - Use changes in object locations to derive depth
  - 2 main methods of achieving SfM:
    - From object flow, think 4 camera device
    - From planar homography, think Photosynth



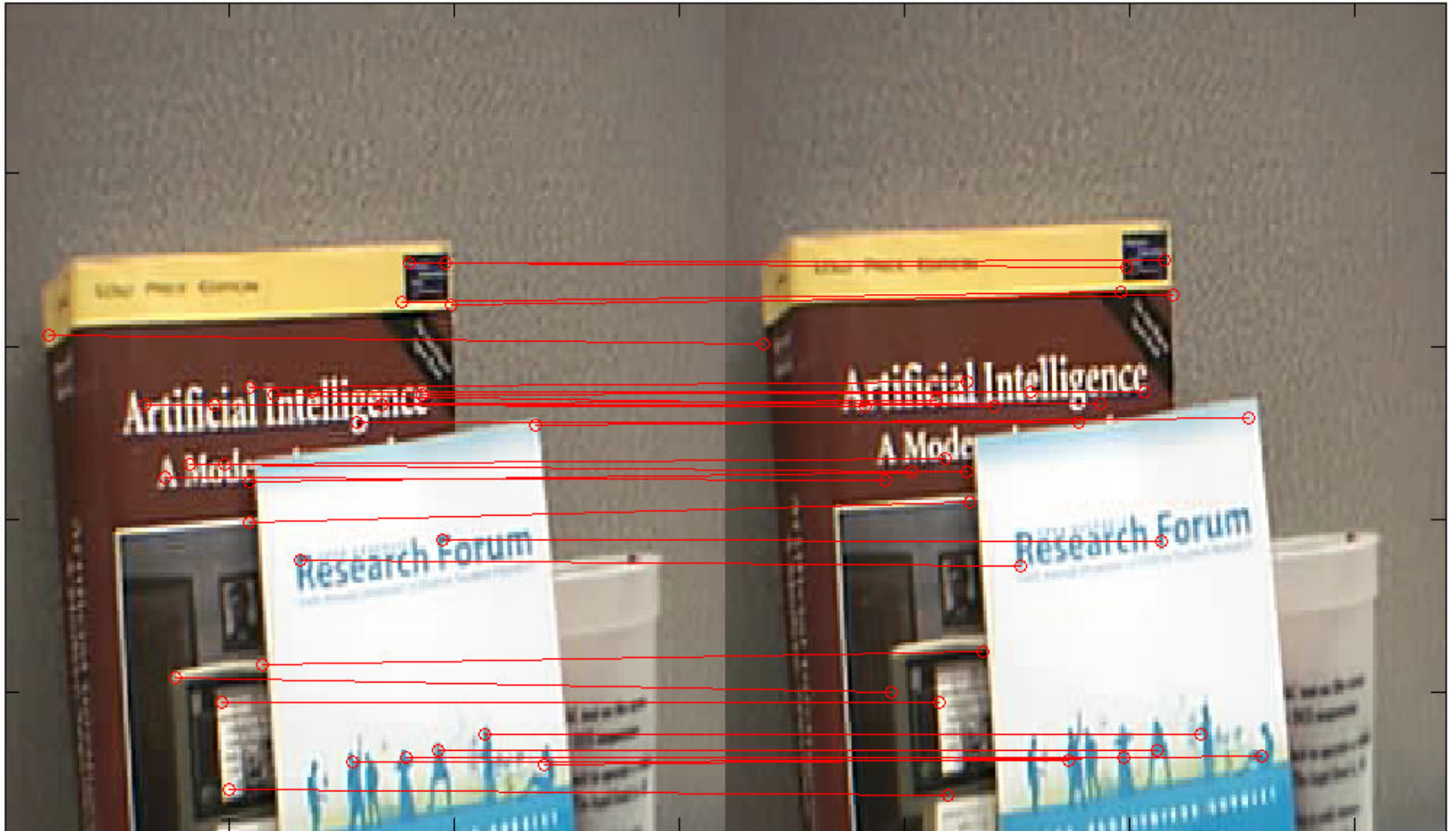
# Topic Overview

- Exploring uses of SfM
  - 4 camera device aware of environment structure
  - Segmenting object movement from environment movement for better global flow
  - SLAM techniques
- Papers:
  - Single Camera SfM w/ automatic baseline selection
  - MonoSLAM
  - FastSLAM

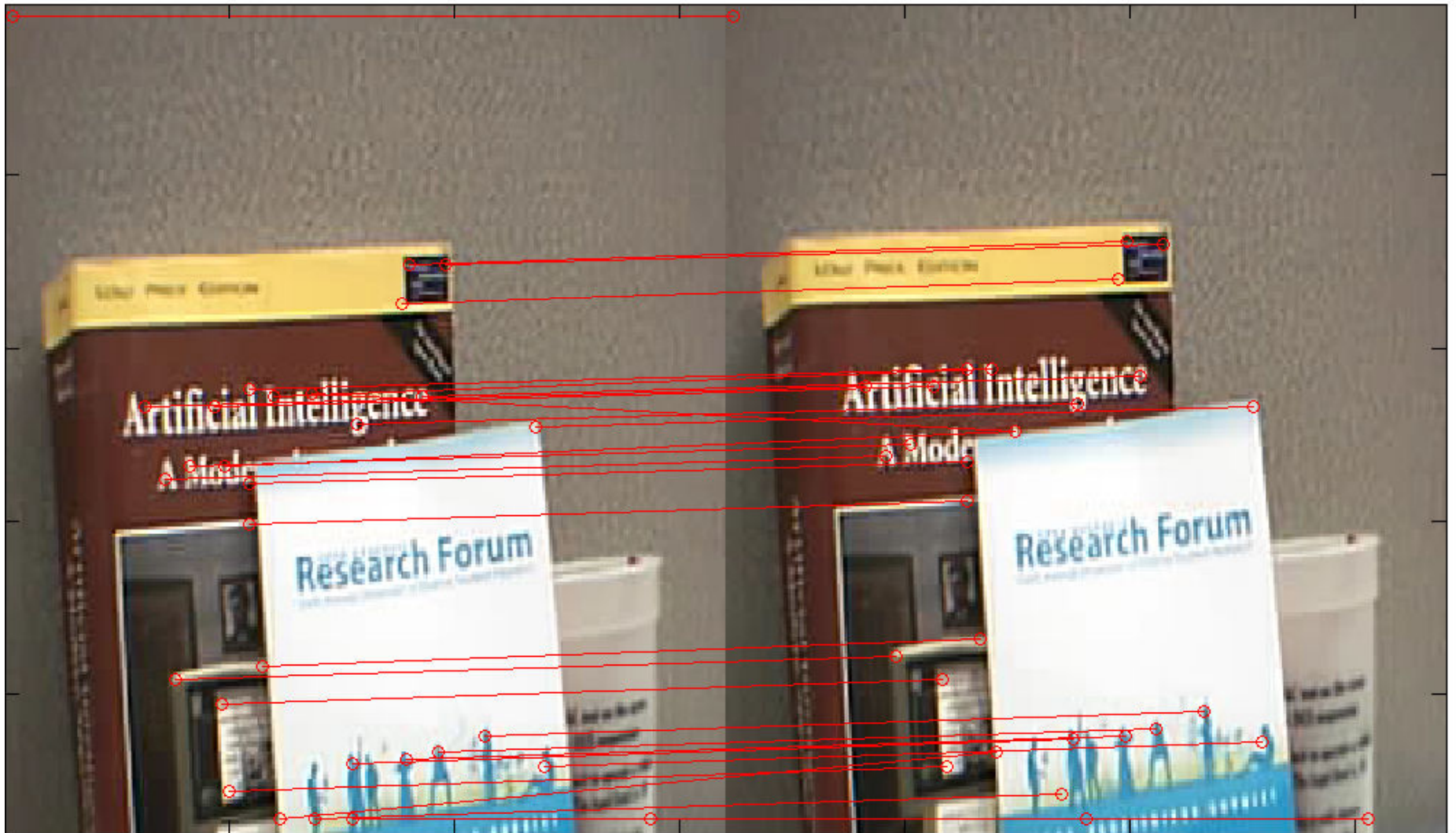
# Results so far: KLT Feature Detection



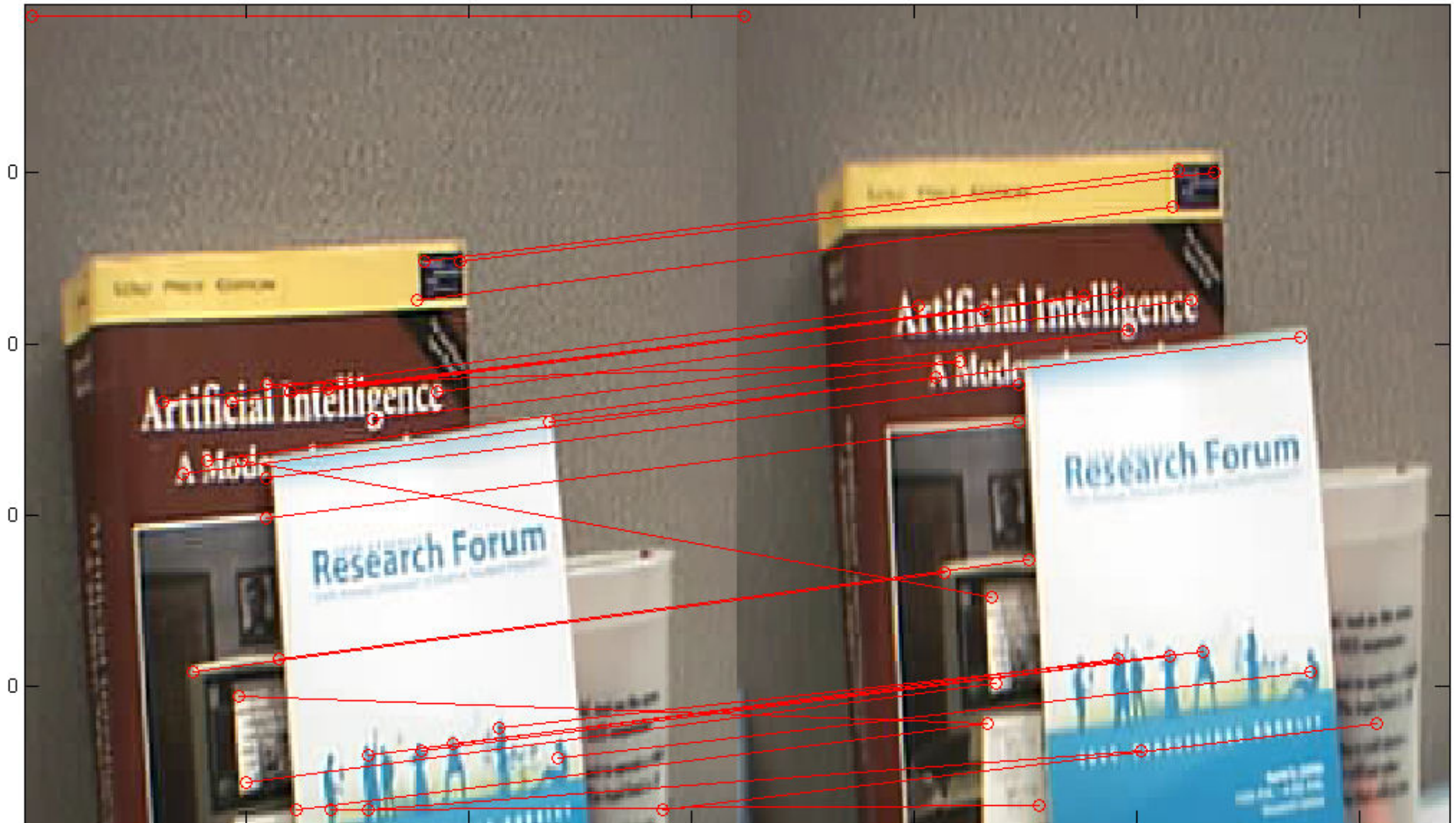
# Results so far: KLT Feature Matching - Flow



# Results so far: KLT Feature Matching - Diff<sup>2</sup>



# Results so far: KLT Feature Matching - Diff<sup>2</sup> (2)



# Future work

- CVPR 2010:
  - Tutorial on 3D shape reconstruction Monday morning
  - Shape-from-X program
- Continue to implement Single-Camera SfM
  - RANSAC for better matching results
  - Derive camera location based on correspondance