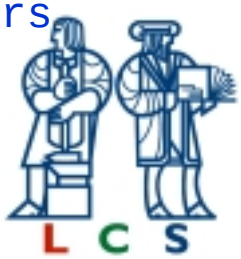
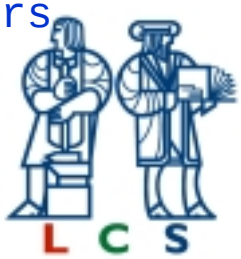


Bi-Annual Report, January 2000

Goal: Rapid Capture of Interior Architectural Spaces

- Acquire high-fidelity geometric and photometric models of real environments
- Provide ability to simulate, visualize and physically interact with this environment



Example Sequence of Interactions

- The images in the following sequence demonstrate the level of model acquisition and fidelity we wish to demonstrate.

- Exterior models were acquired by City Scanning project; Interior models were acquired using a manually-operated post-processing tool for CAD floorplans, and procedural mechanisms for color, texture, and furniture.

Project MIT9904-20: High Resolution Modeling of Architectural Interiors

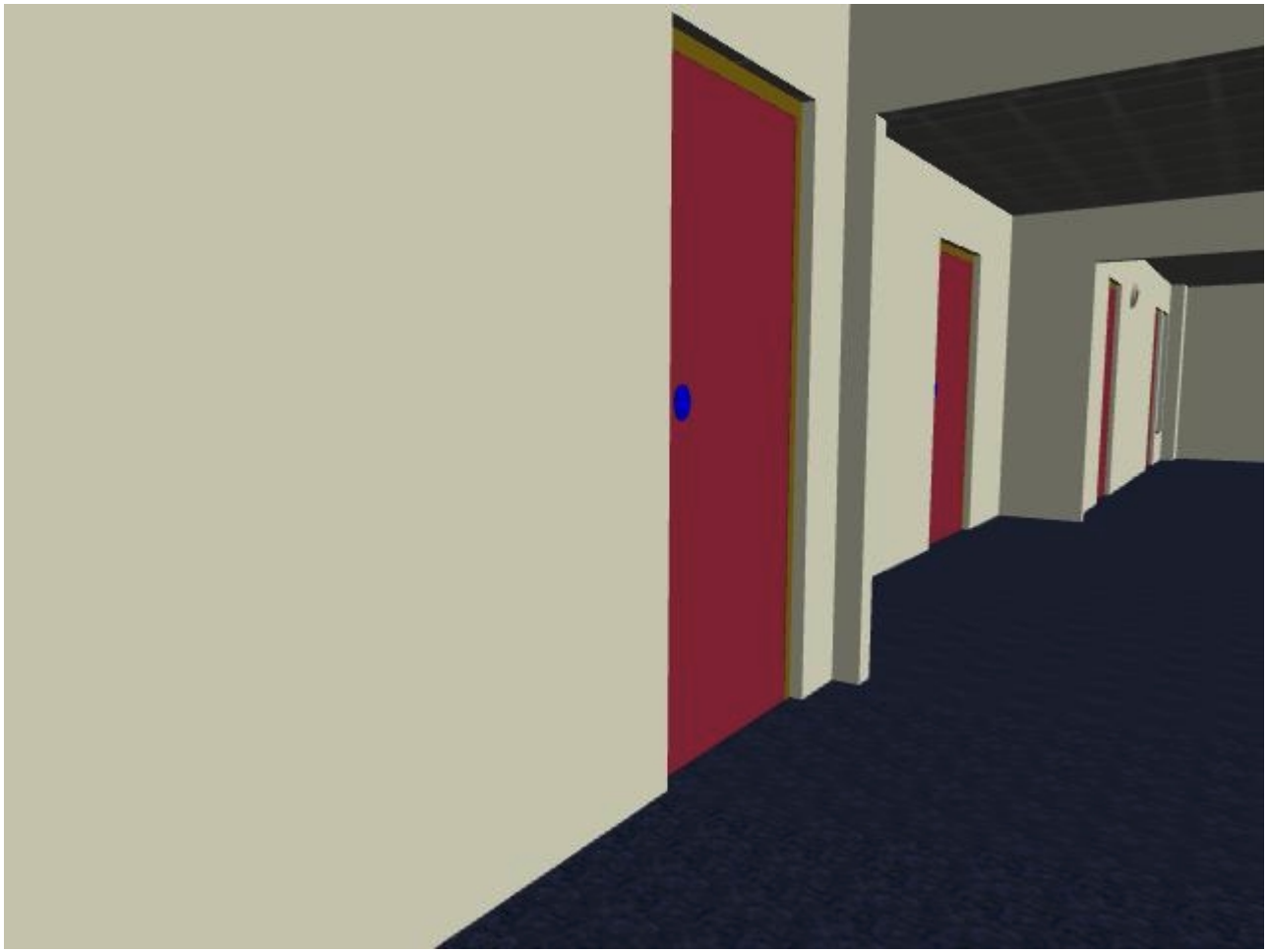
Seth Teller

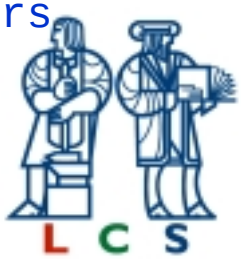
Project MIT9904-20: High Resolution Modeling of Architectural Interiors

Seth Teller

Project MIT9904-20: High Resolution Modeling of Architectural Interiors

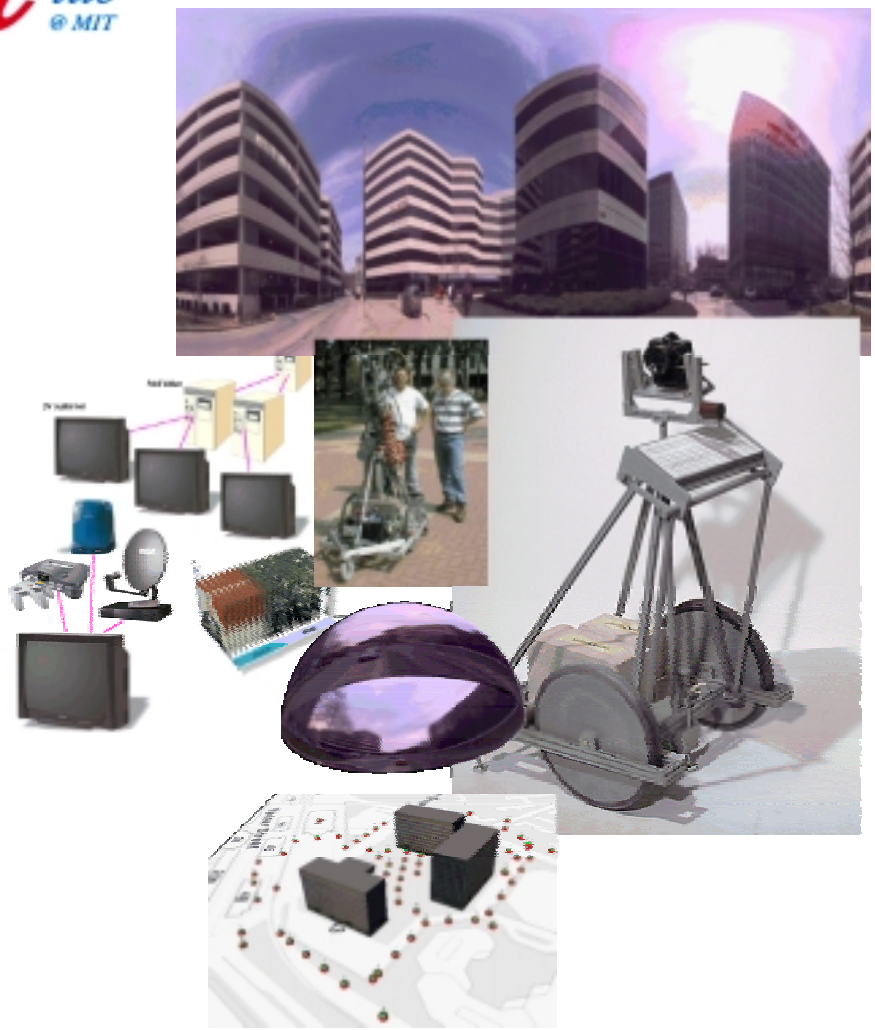
Seth Teller





Research and Engineering Aspects

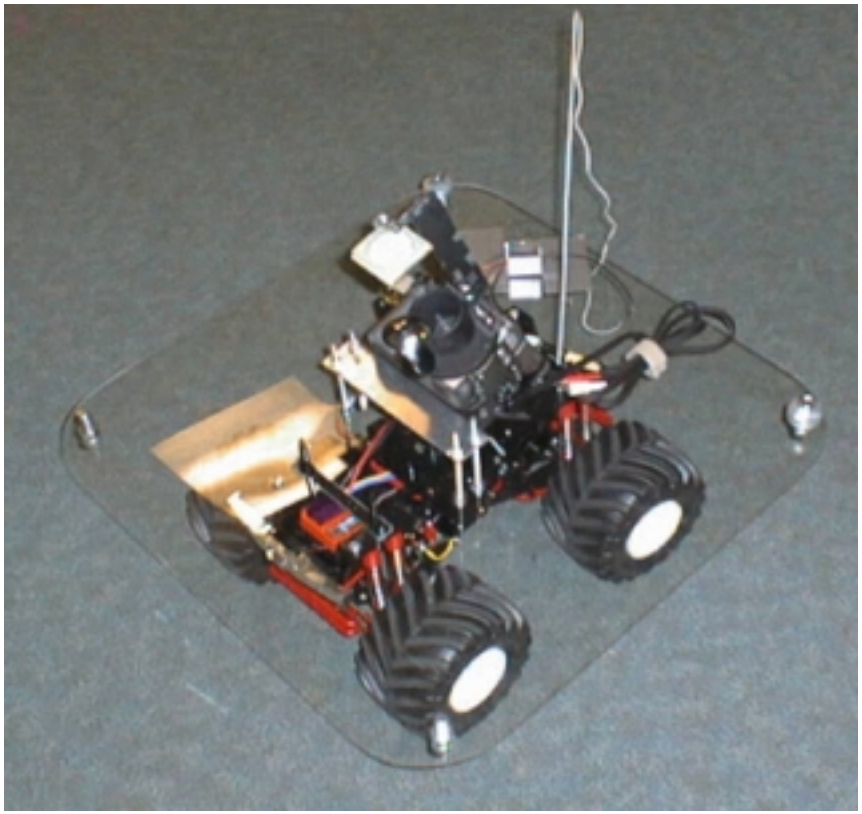
Instrumentation
Exterior capture
Interior capture
Representation

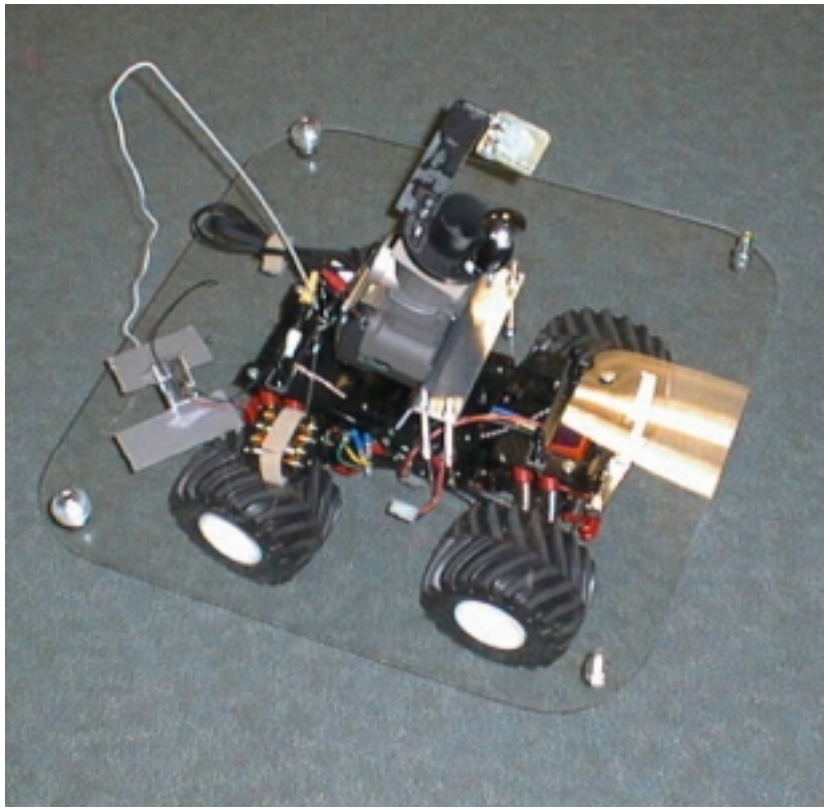


- Connection to ongoing City Scanning project:

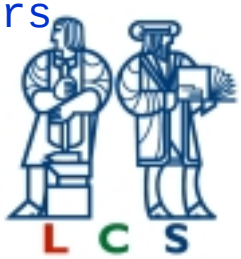
Develop effective sensors, automated and semi-automated software tools for rapid environment capture

- Rover, a follow-on to Argus
  - Remote-controlled electric model car with omni-cam, wheel encoders, etc.





- Through December 1999:
  - Construction of prototype sensor
  - Test deployment in 2nd Floor of LCS
  - Initial software/processing architecture
- Next six months:
  - Develop strategies for ego-motion estimation
  - Investigate inertial sensors, range-scanners
  - Sparse and dense reconstruction algorithms



Evaluation Criteria

- Throughput (acquisition speed)
- Complexity
- Fidelity (Geometric, Photometric)
- Cost
- Operating requirements