

Product Associated Displays and
SearchLight – New Developments
Based on the Fluid Beam
Application

Overview

- The Fluid Beam application (basics)
- Original SearchLight implementation
- Improved SearchLight implementation
- Product Associated Displays
- Next steps

The Fluid Beam application

- Distortion-free projection on arbitrary planar surfaces
- Hardware: steerable projector and camera unit
- Realization: projection of pre-warped images provided by a virtual camera in a 3D model of the environment; images, videos and live video streams can be shown on projected *virtual displays*



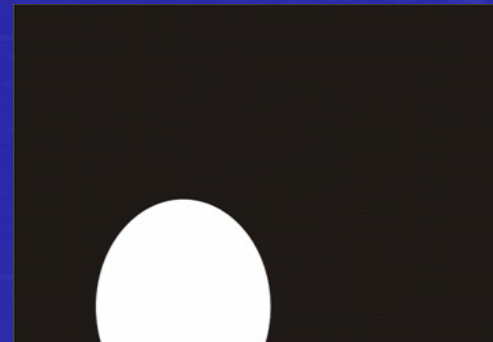
SearchLight (basic idea)

- Physical search function in instrumented environments using projected highlighting
- Objects are tagged with optical markers (AR Toolkit)
- Environment is scanned using the camera of the steerable unit
- Bright spot is projected around the searched object (marker)



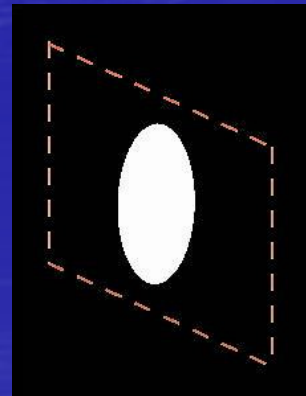
Original implementation

- Move unit to memorized position, draw oval at the corresponding position
- Drawbacks: no distortion correction, markers at the border of the image lead to cropped spots



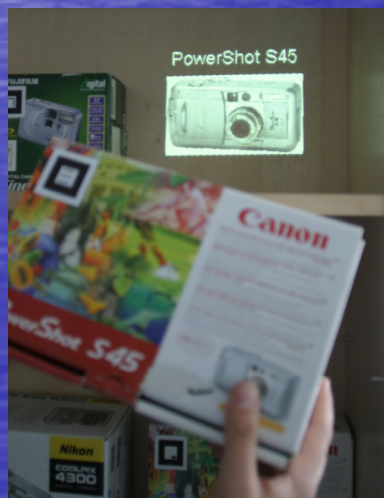
Improved SearchLight

- Virtual display is created at the position of the marker and spot is displayed as image on it
- Advantages: distortion correction, no cropped spots, integration into the Fluid Beam application



Product Associated Displays (PADs)

- Instrumented shelf: products fitted with RFID tags
- Projected display appears at the former position of the product when it is taken out of the shelf
- User can ask questions about the product and information is displayed on the PAD



Displaying several PADs

- Projection surface limited by the outlines of the projector beam
- First display is placed in the middle of the projected region
- Additional displays: check if visible; if not visible, move steerable unit until display is visible
- New displays appear at the border of the projected region
- As many displays as possible can be shown at the same time

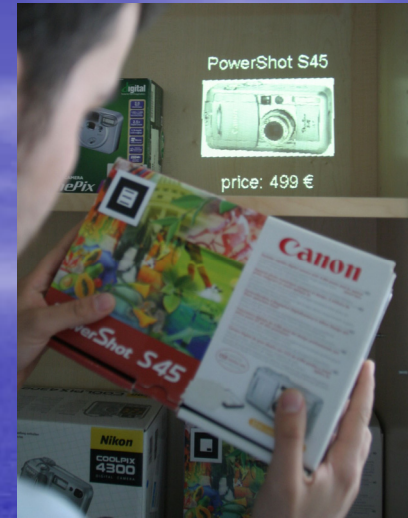


Student work connected with the Fluid Beam application

- Automated 3D model acquisition using the steerable projector and camera unit (master thesis)
- Generation of a path network for a projected virtual room inhabitant (diploma thesis)

Next steps

- Speech and gesture control of the steerable unit using a PDA for the speech recognition
- Pan and tilt sensors for exact positioning of the steerable unit
- Cooperation with the Hecht Museum in Haifa (projected information on/around an ancient ship)



Discussion

