Localization Based on Agami Fiducials with OMNIVIEWS Camera
- First Experiments

Tomáš Pajdla
Center for Machine Perception
Czech Technical University
Czech republic
pajdla@cmp.felk.cvut.cz
http://cmp.felk.cvut.cz

Dmitry Livshitz
Faculty of Electrical Engineering
Technion
Israel
sharasr@techst02.technion.ac.il
http://www.technion.ac.il
Observed intensity of an Agami fiducial depends on the viewing angle

\[ \Rightarrow \text{viewing angle from one view} \]

Image of an Agami fiducial
Height profile of an Agami fiducial
Panoramic image taken by a catadioptric panoramic camera with a CCD imager of the size $576 \times 768$ pixels
A detail view of the fiducial in a conventional image
Localization from *conventional* panoramic images of two fiducials

Test room with four fiducials
Localization is done by intersecting two lines from with directions measured from average gray levels of observed fiducials by a *conventional* panoramic catadioptric camera!

Localization error histogram
Localization from simulated SVAVISCA panoramic images of two fiducials distance to as well as the size of the fiducial $= 60$ cm, size of the

An image taken by a catadioptric panoramic camera with the SVAVISCA imager (simulation)
A detailed view of the fiducials in a SVAVISCA image (simulation)
Average intensities in fiducial squares as a function of the position

from conventional images

from SVAVISCA images (simulations)

should be (and are) the same up to resampling error.
Conclusions

1. two Agami fiducials are enough to localize;

2. based on the average intensity in an image area \(\rightarrow\) low resolution OK;

3. works up to 3 meters for 60 cm fiducials and 110 \(\times\) 252 SVAVISCA images.