Tracking juggling balls using the Kinect

Rolf Boomgaarden · Thiemo Gries · Florian Letsch

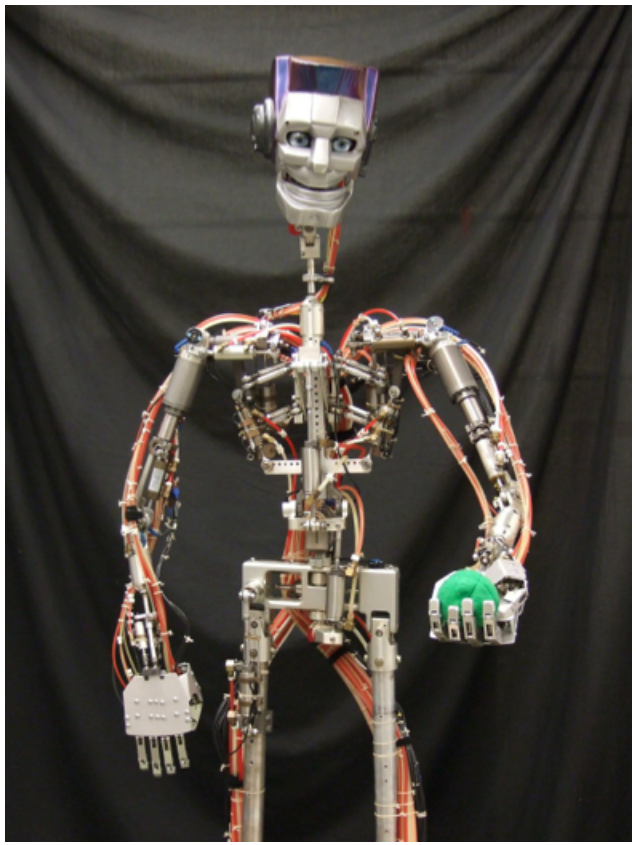
Universität Hamburg

30. Mai 2013

A juggling robot

Playing Catch and Juggling with a Humanoid Robot

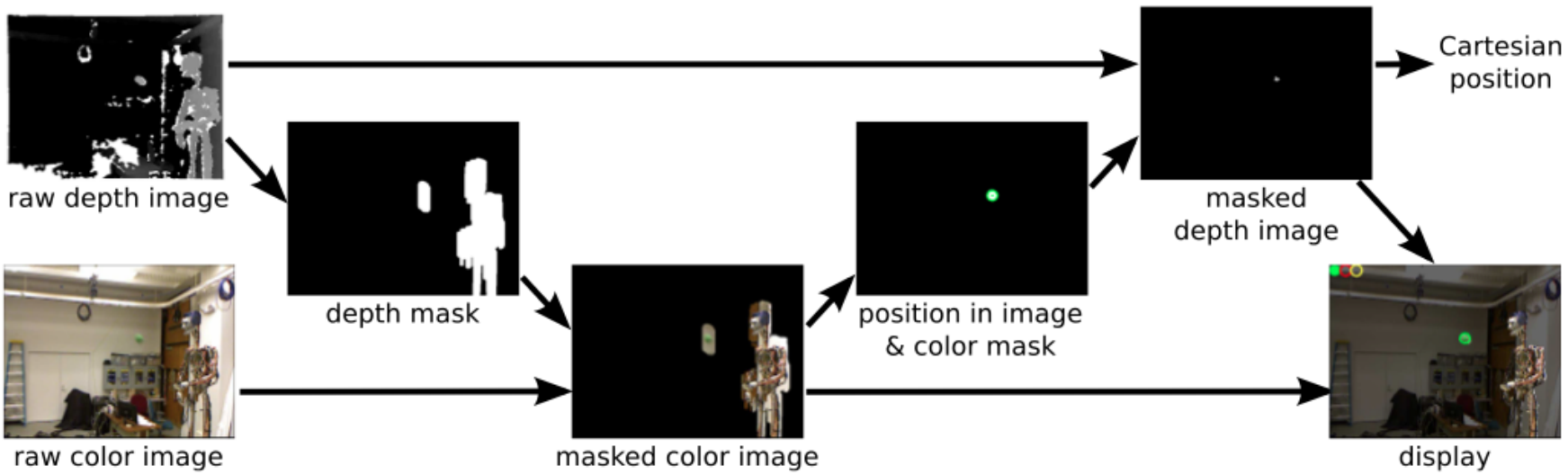
Jens Kober[1], Matthew Glisson, and Michael Mistry[2]
Disney Research, Pittsburgh, USA
[1] Bielefeld University, Germany
[2] University of Birmingham, UK



System description

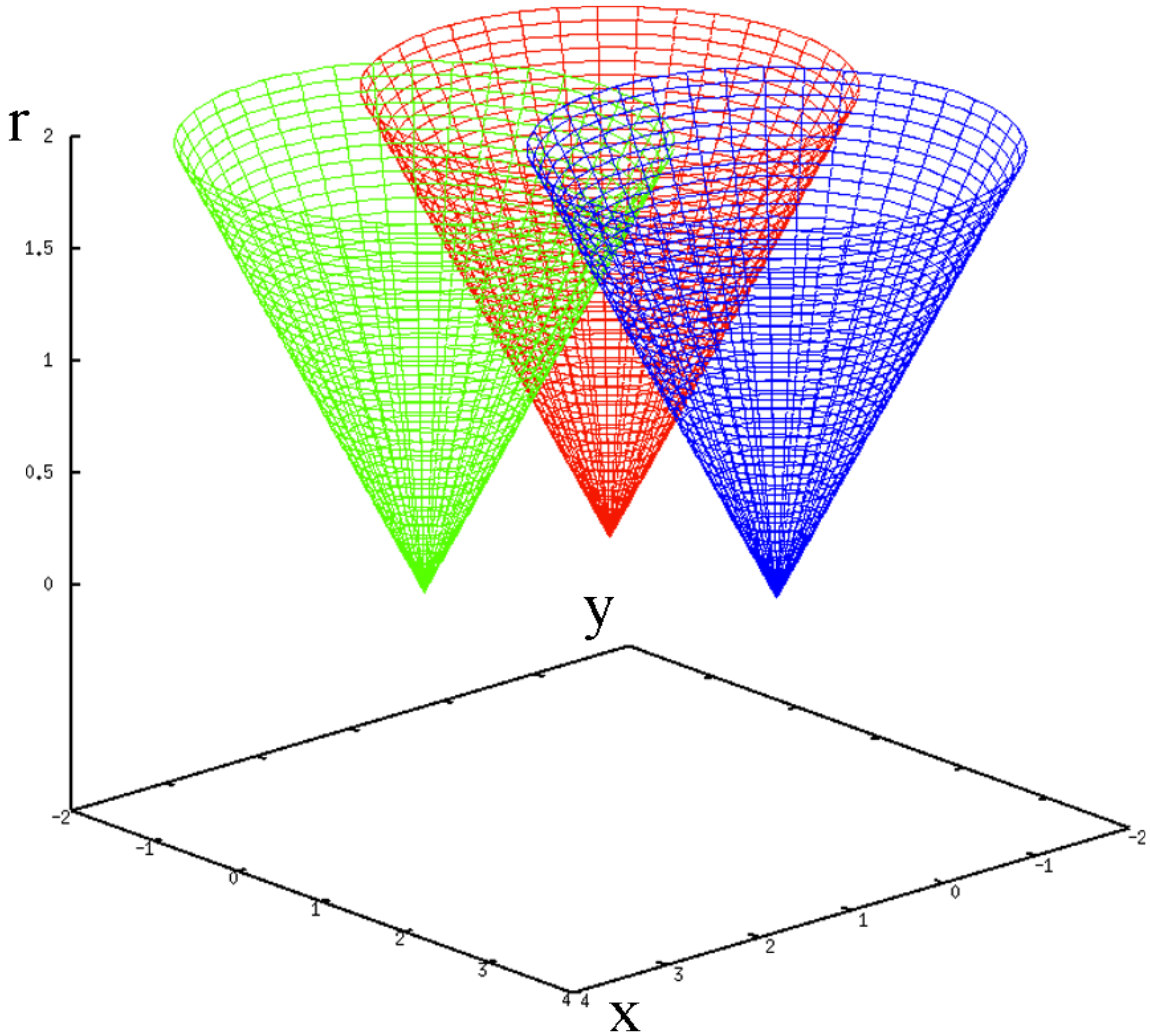
1. Robot hardware
2. Vision system
3. Ball Filtering and Prediction
4. Robot State Machine
5. Catching Algorithm
6. Throwing Approach
7. Juggling

Image processing pipeline



Hough Transform

FIXME: Thiemo



Kalman Filter

sub

FIXME: Rolf

Conclusion

Video + paper conclusion

The flow

IN: rgb + z

- eliminate background in z
- search local maxima in z $\rightarrow$ ROIs
- use ROI mask on rgb
- Hough transform on rgb
- Match corresponding balls in multiple frames
- Kalman filter for each ball

Challenges

- Local maxima
- Multiple balls (colour?)

The end

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