CVR - Final Project Object Detection and Pose Estimation

Team Lenna



known 3D-2D correspondences between model and reference image

frame by frame object detection and robust pose estimation

Approach: EPnP algorithm

EPnP: An Accurate O(n) Solution to the PnP Problem; Lepetit V., Moreno-Noguer F., Fua P.; International Journal of Computer Vision, 2009, 81, 2, 155-166

Secondary Goal



generate 3D model

calculate 2D reference by raytracing calculate 3D-2D correspondences

Approach: KinectFusion algorithm

KinectFusion: Real-Time Dense Surface Mapping and Tracking; Newcombe R, Izadi S, Hilliges O, Molyneaux D, Kim D, Davison A, Kohli P, Shotton J, Hodges S, Fitzgibbon A; *IEEE ISMAR*, 2011

Roadmap

• -> 24.06.

- Basic running implementation using OpenCV's <u>calib3d::solvePnP</u>
- -> 01.07.
 - streamline 3d model aquisition so arbitrary objects can be scanned and then detected
- -> 08.07.
 - impressive additions: <u>augmented reality on tra</u> <u>plane</u> (or 3D object if time permits)