Work Progress Report

Project Period: 2015/02/16 ∼ 2015/08/18

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Title

Developing an experimental platform for Human Robot Interaction based on human motions

1 2015/02/15-2015/02/21

Date	Content	Problems/Remarks
2015/02/15	• Arrival in Japan	-
2015/02/16	• Project discussion with professor. • Showed demo of ALVAR toolkit, CMT (Consensus based matching and Tracking) toolkit. Demo based on PC webcam. • Received Kinect V2 sensor.	-
2015/02/17	• Play with Kinect sensor SDK samples. • Setup Point cloud library environment. • Undergraduate presentation. • Welcome party.	• Problem with acquiring Kinect data and displaying in PCL viewer.

Date	Content	Problems/Remarks
2015/02/18	• Fixed the PCL Kinect Grabber problem (Signal for PCL point type PointXYZRGBA has not been registered in OpenNISegmentTracker) • Tried to make 3D model of smartphone to be able to track using PCL tracker.	• PCL tracker could not be used using reference point cloud. Under investigation (postponed)
2015/02/19	• Started integrating ALVAR,CMT to be used with the Kinect Stream • It needs custom build of OpenCV. OpenCV v2.4.10 does not support OpenNI2. So had to build the latest version of OpenCV.	-
2015/02/20	• Setting up new PC (VS2010, VS2013, PCL, Kinect SDK)	-

Date	Content	Problems/Remarks
2015/02/21	• Continue PC setup (Aldebaran Softwares, Intel XE composer 2015) • Start custom build of OpenCV (v3.0.0). Fixed many issues related to building the software. • Build of OpenCV (version 20150221) successful	-

2 2015/02/23-2015/02/27

Date	Content	Problems/Remarks
2015/02/23	• ALVAR tookit build • Glut32, FreeGlut build • OpenNI2 + Kinect Driver V2 build and Test (http://youtu.be/nhNPri5Aees) • Contacted Paolo Coletta of Eyesweb team and asked about how Kinect V2 is integrated in Eyesweb	-
2015/02/24	• ALVAR tookit Kinectv2 capture plugin build	• Problem encountered while capturing the Kinect Color frame
2015/02/25	• Started writing C#.NET Wrapper for libCMT (Consensus based Matching and Tracking library). After completion and testing will open source the library.	-

Date	Content	Problems/Remarks
2015/02/26	• Kinect calibration and Marker tracking using ALVAR library complete (http://youtu.be/ypb3T9BUipQ). A 7.5 × 7.5 cm marker tracking range is ∼ 3 m. • Wrote Kinect Video capture plugin and integrated with CMT.	• CMT → Very slow. And the tracking was not very robust.
2015/02/27	• Started again with PCL Tracker. • Modified OpenNI2 Kinect2 driver (Driver Initialization and Kinect Device setProperty) • Started exploring BLORT toolkit (http://www.acin.tuwien.ac.at/index.php?id=290&L=1) • Preparation to import 3D model of Nao Head	• Kinect2 device takes approximately 3 seconds to initialize properly ! • Particle filter tracking was very slow. Still not successful (need to be studied systematically) • Building BLORT in windows was very painful.