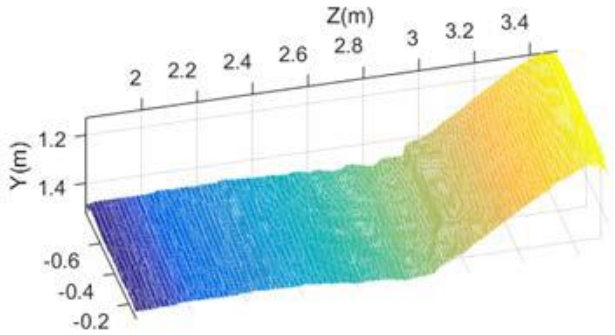
Bed Angle Detection in Hospital Room Using Microsoft Kinect V2

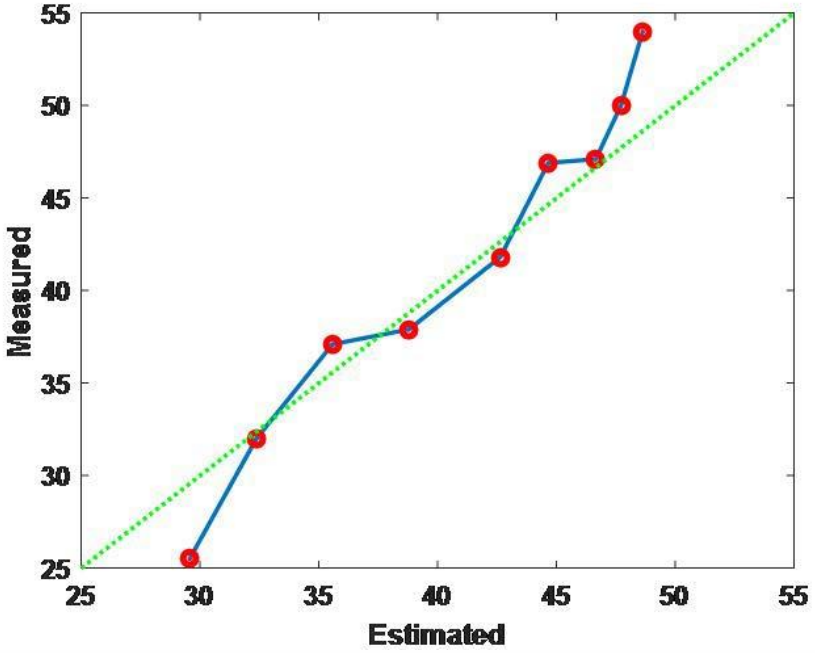
Liang Liu, Sanjay Mehrotra

Center for Engineering Health, Department of Industrial Engineering and Management Science, Northwestern University

This research will focus on bed angle detection in hospital room automatically using the latest Kinect sensor. The developed system is an ideal application for nursing staff to monitoring the bed status for patient, especially under the situation that the patient is alone. The patient bed is reconstructed from point cloud data using polynomial plane fitting. The analysis to the detected bed angle could help the nursing staff to understand the potential developed hospital acquired infection (HAI) and the health situation of the patient, and acquire informative knowledge of the relation between bed angle and disease recovery to decide appropriate treatment strategy.



The ROI including the bed point cloud.



The estimated vs. the measured bed chair angle. The ideal result is shown by a green dotted line. Those red dots are from our experiments. All the units are in degree.

ACKNOWLEDGMENTS: The authors would like to thank IEMS department, northwestern memorial hospital.