<table>
<thead>
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<th>Title</th>
<th>Fast human body circular measurement based on a single kinect</th>
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<tr>
<td>Author(s)</td>
<td>Dao, Nguyen Luc</td>
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<td>Dao, N. L. (2014, March). Fast human body circular measurement based on a single kinect. Presented at Discover URECA @ NTU poster exhibition and competition, Nanyang Technological University, Singapore.</td>
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<td><a href="http://hdl.handle.net/10220/24250">http://hdl.handle.net/10220/24250</a></td>
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Motivation
Human measurements are important information in clothing, entertainment and health care industries. However, due to high cost and inconvenience, the current anthropometries are inappropriate for applications such as E-commerce. The previous Kinect based methods are very time consuming (15 – 60 min/body). Our method can produce 3D point clouds and measurements of the subject body swiftly, around 20 seconds, with a comparable quality to the previous works.

Methodology

Data Capturing
- Capture 4 views: front, left, back and right

Segmentation
- Subtract background
- Eliminate noise by BFS and DBSCAN

Cloud Merging
- Construct 3D cloud
- Merge 4 clouds by applying ICP on the boundaries and entire clouds

Measurement
- Ellipse fitting
- Convex hull

Result
Experimental results show that convex hull produced more accurate and precise measurements whose median errors were less than 3cm. Average execution time was 18.5 seconds.

Future work
- Estimate straight measurements such as outseam, arm length, etc.
- Automatic body measurement based on point clouds and skeletons

Project Title: Kinect Based Human Body Measurements
Supervisor: Assoc Prof Cai Jianfei

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