# **Data Extraction Module Docs**

# Overview

This module, primarily written in Python, contains methods to obtain measurements from a 3D point cloud. The measurements extracted from this module are wingspan, height, waist, and chest.

# **Prerequisites**

Python 3.11

Open3D 0.18.0

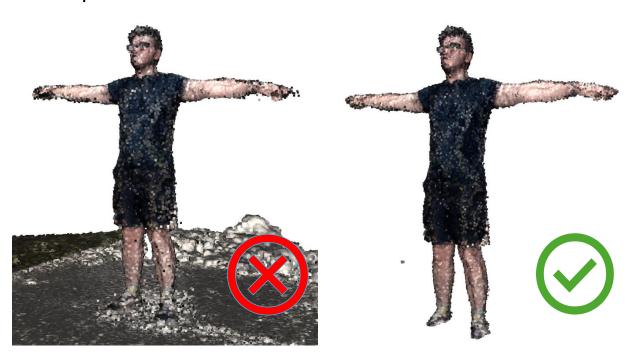
NumPy

**Pandas** 

Supported operating systems:

- Ubuntu 18.04+
- macOS 10.15+
- Windows 10+ (64-bit)

Before calling the methods in this module, point clouds **must be denoised to only be that of the individual person** to ensure accurate measurements.



# Methods

dataExtract( pointcloud, threshold=0.001 )	Extracts height, width, waist, and chest from
	pointcloud.
drawMeasurements( pointcloud,	Draws point cloud with positions of height
height_points, width_points)	points and width points to new window.

# dataExtract(pointcloud, threshold=0.001)

### Parameters:

- **pointcloud**: (open3d.geometry.PointCloud) Must be denoised.
- threshold: (float) How wide the area of points it grabs for chest and waist calculations.

### Returns:

- measurements: (pandas.DataFrame)
- **height\_points**: (list) The top and bottom most point on the point cloud.
- width\_points: (list) The points from one hand to the other on the point cloud.

## Example:

```
import open3d as o3d
# Used to denoise point cloud
from ModelGenFunctions import cut floor
from ModelGenFunctions import cloud denoise
from data extraction import dataExtract
# Reads point cloud from location and assigns to pc
pc = o3d.io.read point cloud("point-cloud-example/brandon-5 8 slow.ply")
# Denoises point cloud
pc = cut floor(pc)
pc = cloud denoise(pc)
# Extracts measurements and the points it grabs
measurements, height points, wingspan points = dataExtract(pc)
measurements = measurements.loc[0]
height = measurements["height"]
wingspan = measurements["wingspan"]
waistCir = measurements["waist-cir"]
chestCir = measurements["chest-cir"]
print(
    f"Height: {height} units\n" +
    f"Wingspan: {wingspan} units\n" +
   f"Waist Circumference: {waistCir} units\n" +
    f"Chest Circumference: {chestCir} units\n"
```

# drawMeasurements(pointcloud, height\_points, width\_points)

### Parameters:

- pointcloud: (open3d.geometry.PointCloud)
- **height\_points**: (list) The top and bottom most point on the point cloud.
- width\_points: (list) The points from one hand to the other on the point cloud.

### Returns:

None

### Example:

```
import open3d as o3d
# Used to denoise point cloud
from ModelGenFunctions import cut_floor
from ModelGenFunctions import cloud denoise
# Used to extract height and width points
from data extraction import dataExtract
# Used to draw pointcloud with points in separate window
from data_extraction import drawMeasurements
# Reads point cloud from location and assigns to pc
pc = o3d.io.read point cloud("point-cloud-example/brandon-5 8 slow.ply")
# Denoises point cloud
pc = cut floor(pc)
pc = cloud denoise(pc)
# Extracts measurements and the points it grabs
measurements, height points, width points = dataExtract(pc)
drawMeasurements(pc, height points, width points)
```

#### Output:

