

# FABO ACADEMY X - CHINA

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# 3D SCANNING

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Using a device to turn atoms into bits.

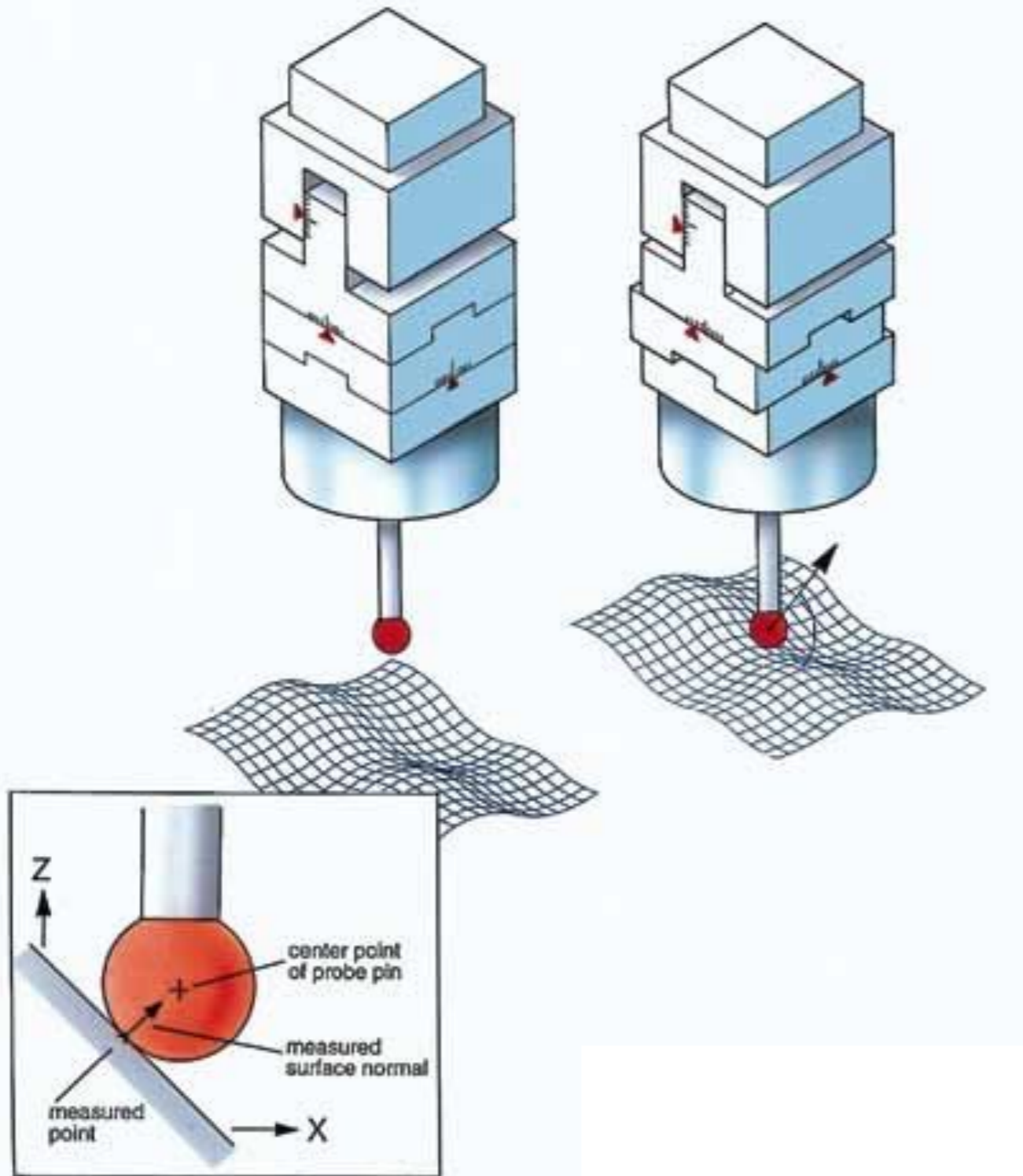
# 3D SCAN TECHNOLOGIES

- Contact Probing
- Structured Light
- Tomography (X-Ray)
- Laser Triangulation
- Photogrammetry
- Infrared Depth Map

# 3D SCAN TECHNOLOGIES

## Contact Probing

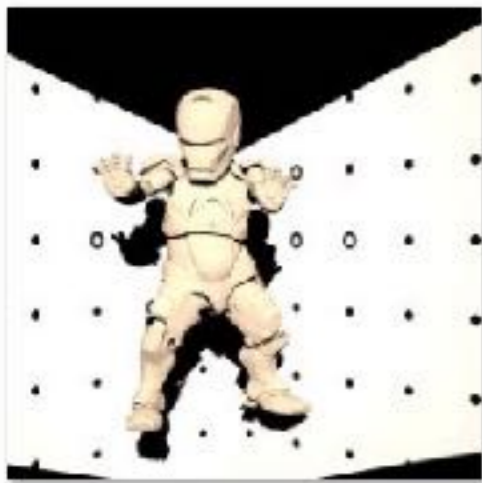
A probe touches the surface of the object to scan.



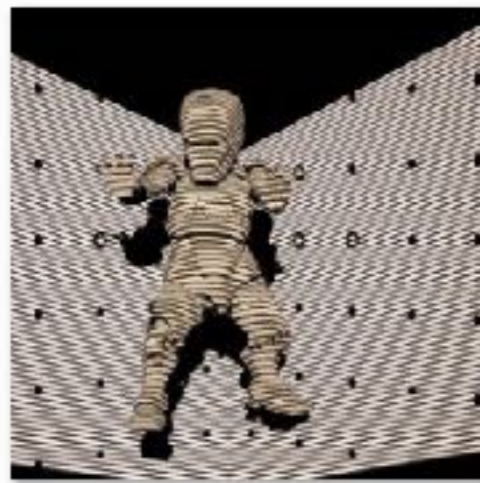
# 3D SCAN TECHNOLOGIES

## Structured Light

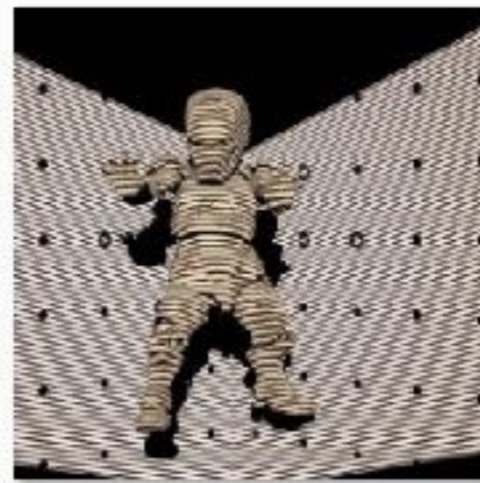
A light source project a geometric pattern on the object



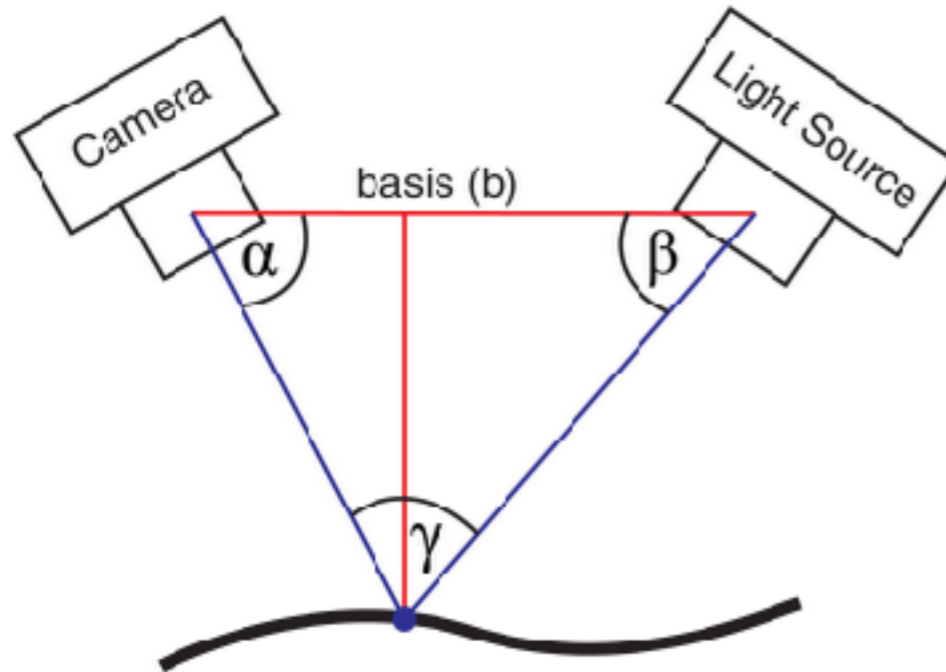
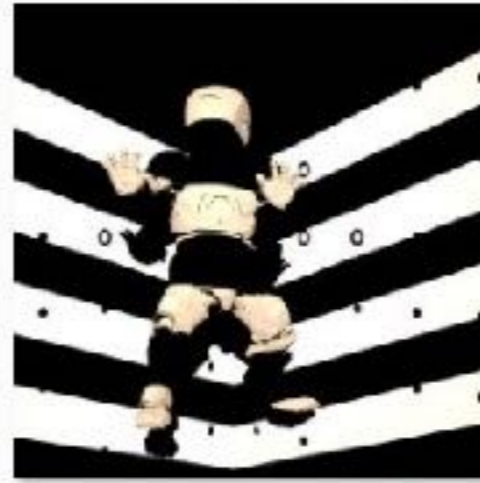
david testScan pattern 00001.jpg



david testScan pattern 00002.jpg



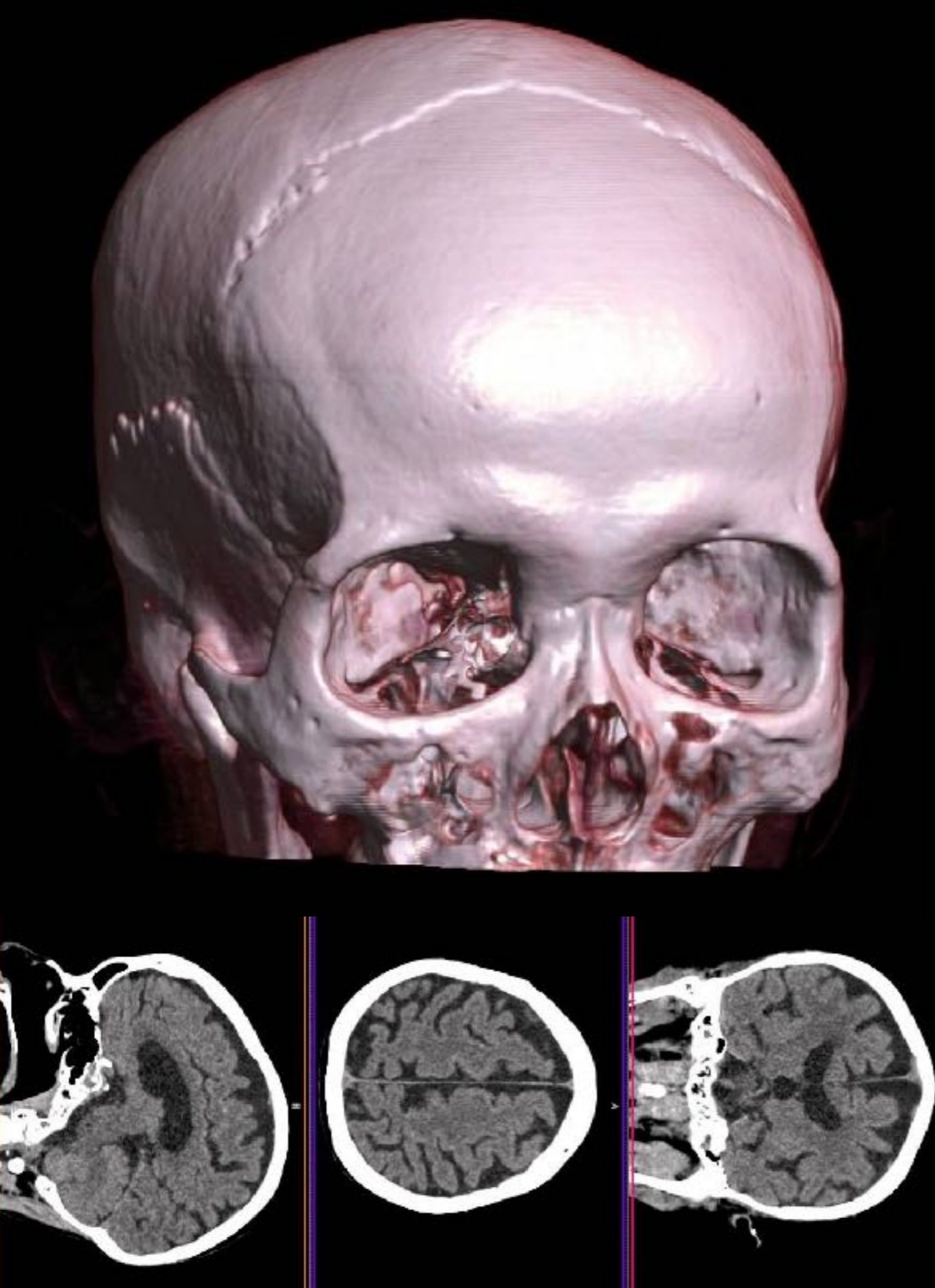
david testScan pattern 00003.jpg



# 3D SCAN TECHNOLOGIES

## Tomography (X-Ray)

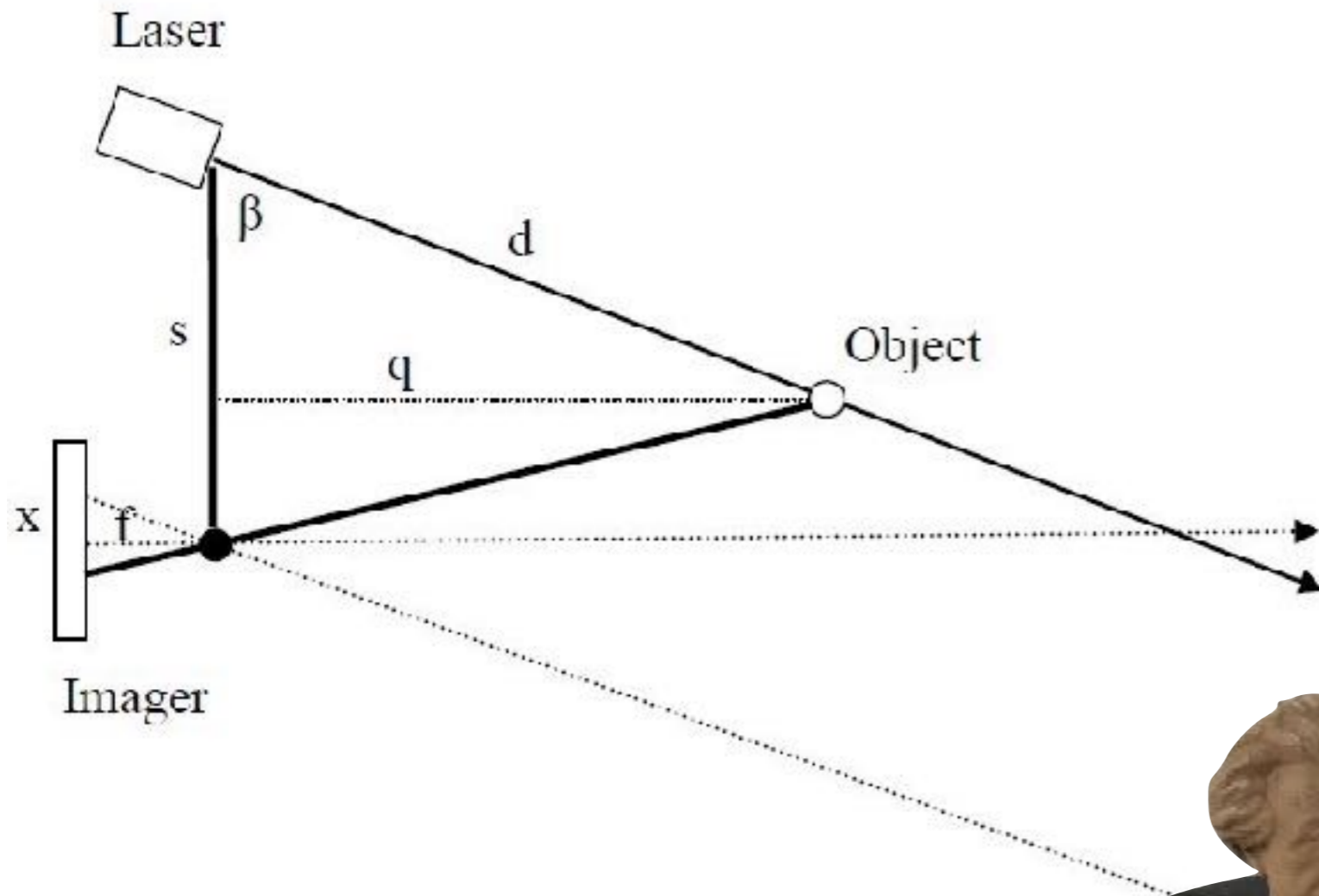
The scanner records several slices of x-ray images.



# 3D SCAN TECHNOLOGIES

## Laser Triangulation

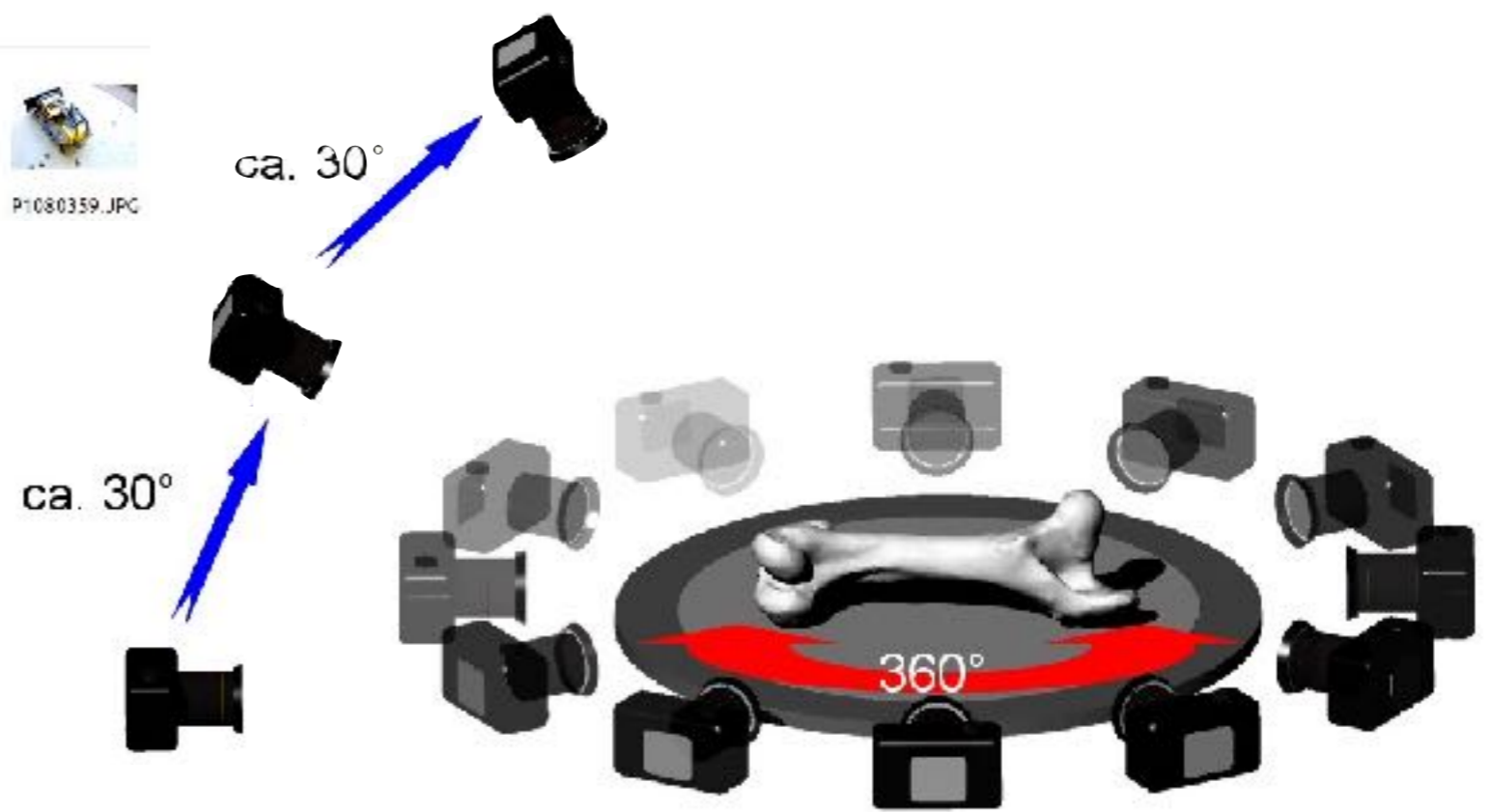
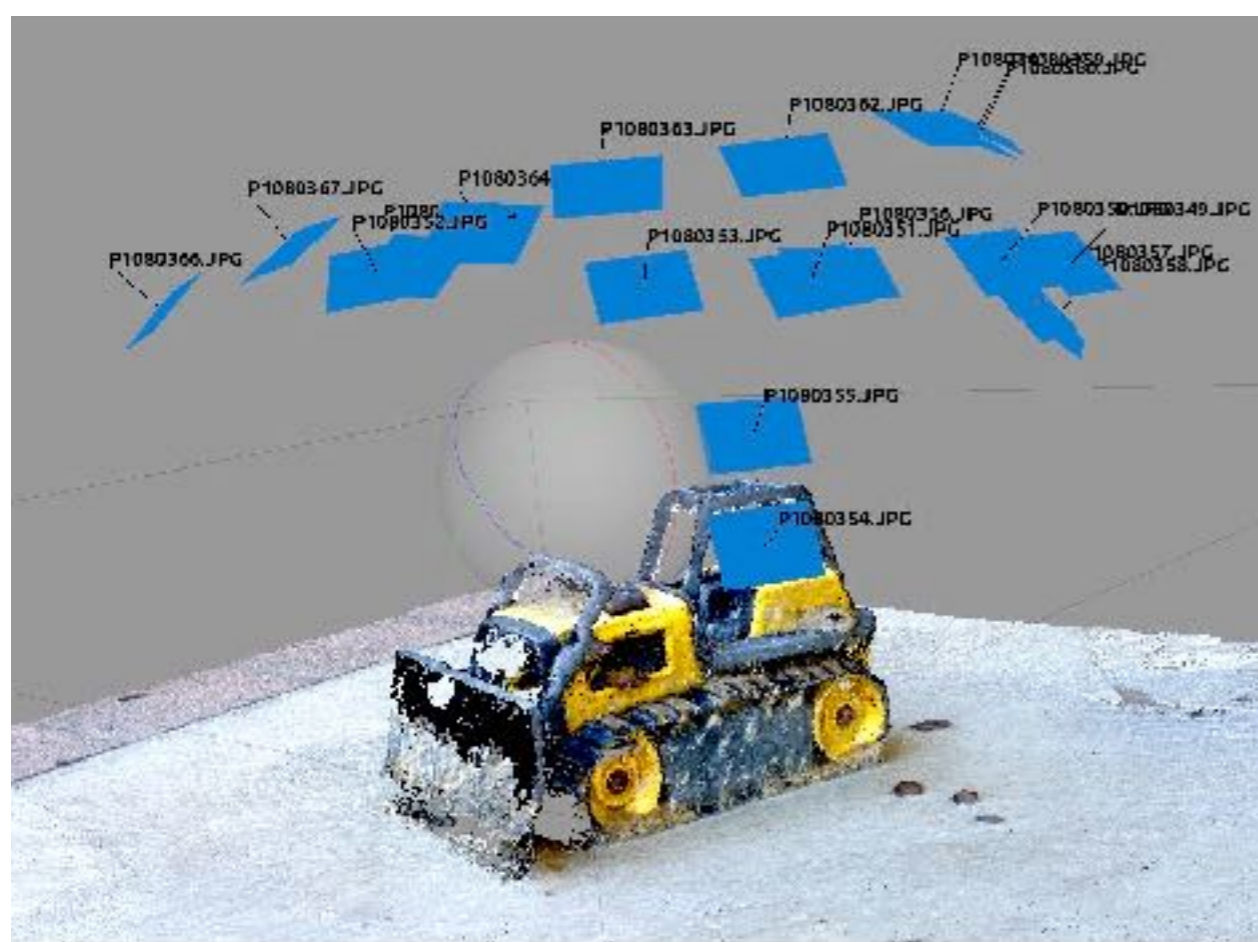
A sensor receive a laser beam emitted by a laser source from a known distance and reflected by the object, calculating its distance.



# 3D SCAN TECHNOLOGIES

## Photogrammetry

A series of pictures are shot by a normal photo-camera at different angles. A software reconstruct the model from a point cloud.



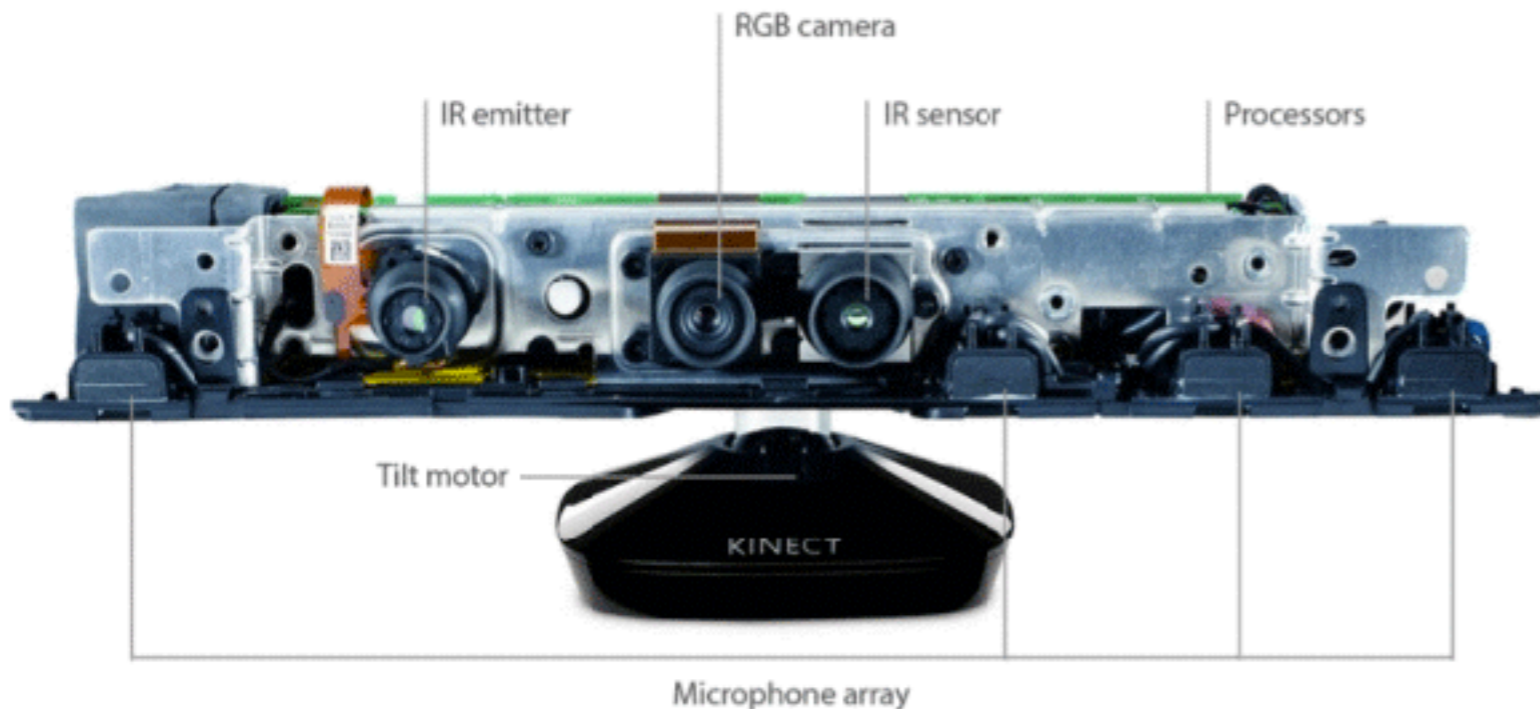
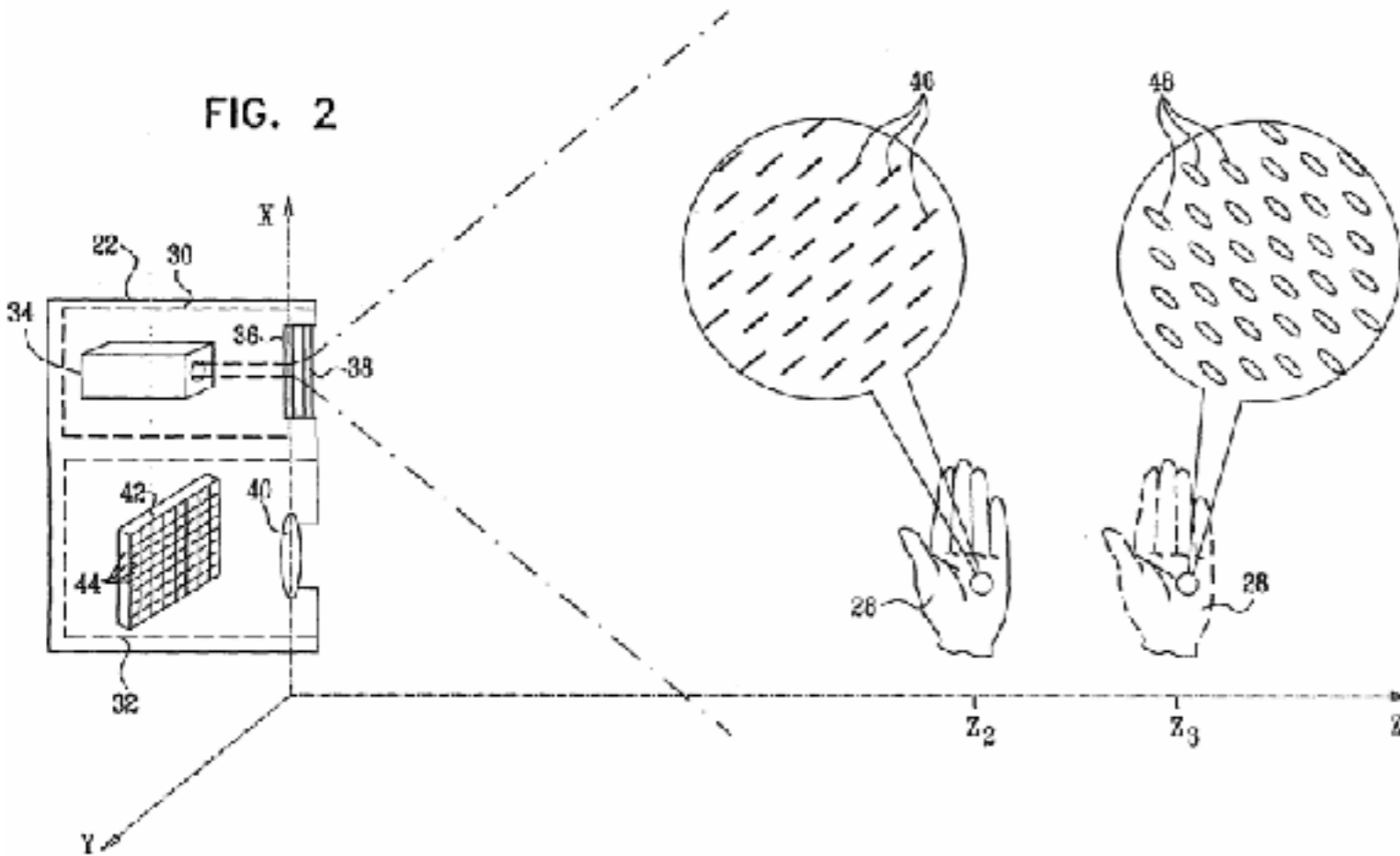


# 3D SCAN TECHNOLOGIES

## Infrared Depth Map

Similar to structured light, a matrix of shapes are projected on the object by an infrared emitter and acquired by an IR sensor. A RGB camera acquires colours.

FIG. 2



# SCAN YOURSELF WITH A 3D SCANNER AND REPAIR THE MESH

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## Exercise 1

# 3D SCAN WORKFLOW – KINECT

- Prepare the acquisition scene
- Perform scanning (Skanect, Reconstruct Me)
- Export model (STL, OBJ)
- Repair Mesh (Fusion 360, Meshmixer)

# 3D SCAN WORKFLOW

## Prepare the acquisition scene

- Scanner is stationary, the object rotates.
- Move the scanner by hand around a stationary object.

Avoid direct sunlight (interference with infrared light), diffused artificial light is better.

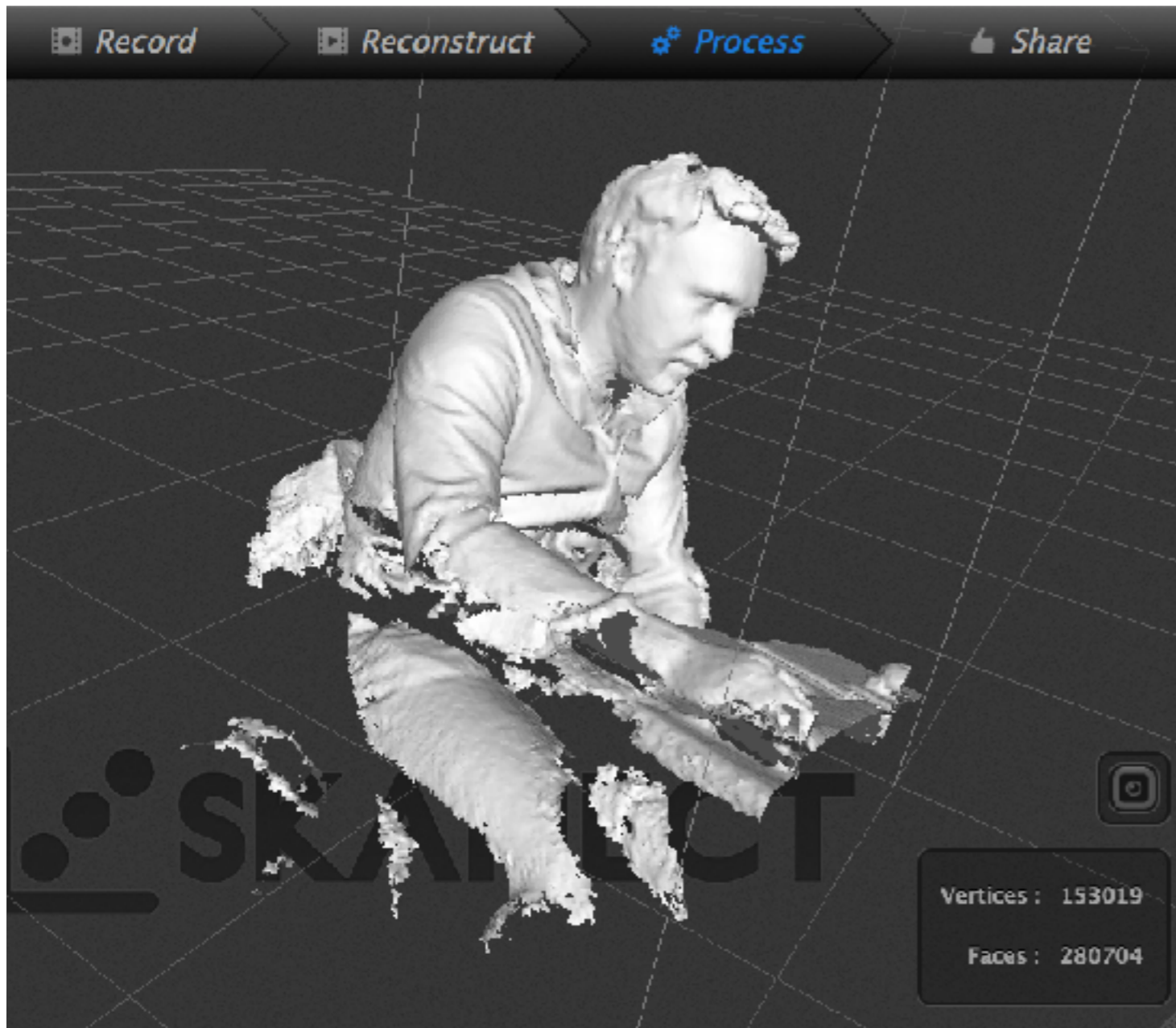
When scanning a person, the Kinect is mounted on a tripod and the subject slowly tilt on a stool or office chair.



# 3D SCAN WORKFLOW

## Perform scanning (Skanect, Reconstruct Me)

- Connect the Kinect
- Control software settings
- Follow software instructions

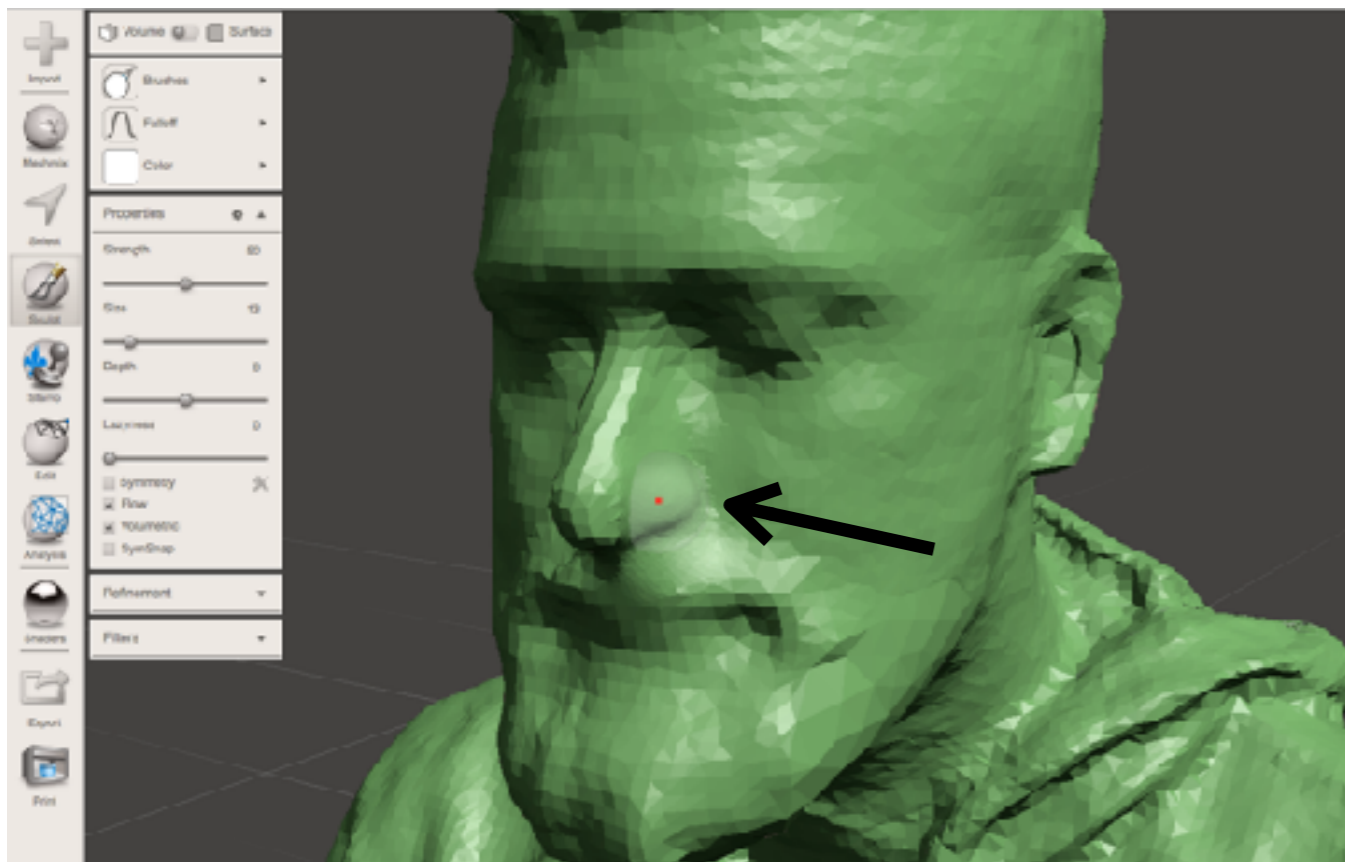
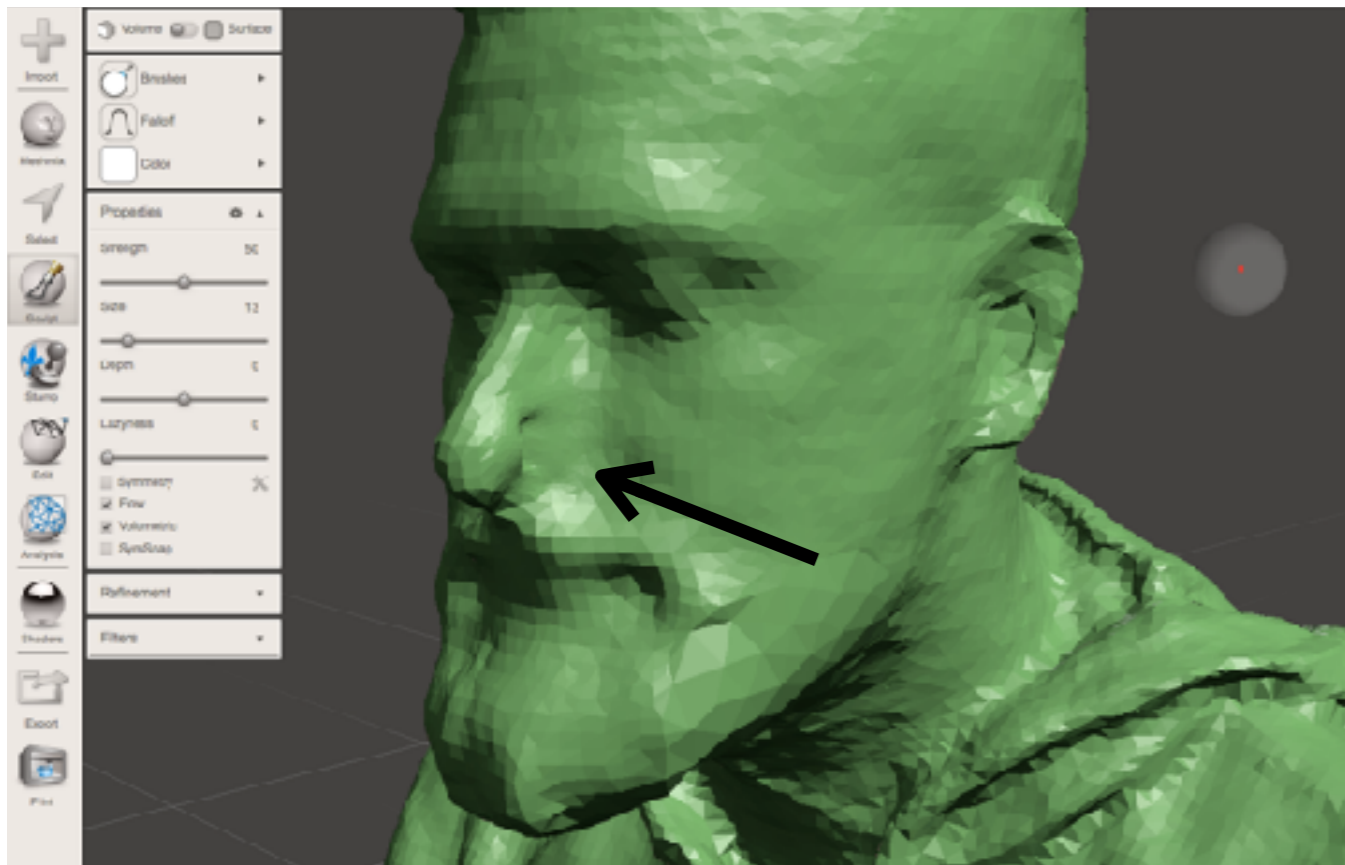


# 3D SCAN WORKFLOW

## Repair Mesh (Skanect, Meshmixer)

Use various tools to repair and patch parts of the mesh:

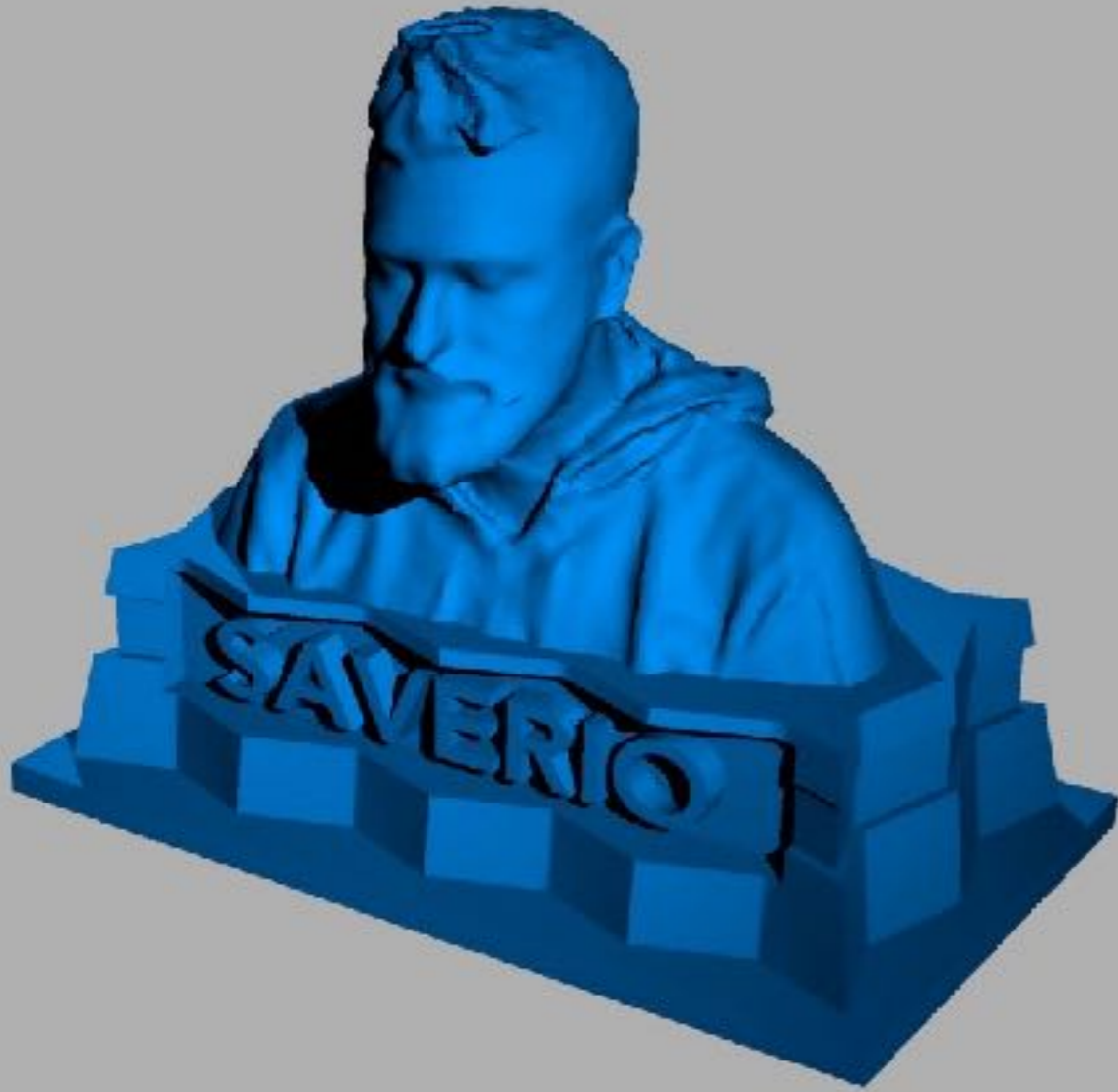
- close holes
- repair details
- push/pull bumps
- make solid
- make watertight
- erase parts



# DESIGN A BASE OR PEDESTAL WITH AN INSCRIPTION TO MAKE A BUST MODEL.

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## Exercise 2



**DESIGN A BASE OR PEDESTAL WITH AN INSCRIPTION  
TO MAKE A BUST MODEL.**

## **Exercise 2**