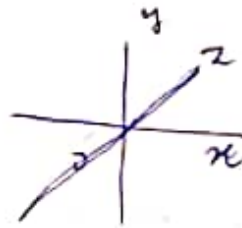


# DAY 4

\* choose <sup>detailed</sup> concise problems.

computer vision. github.io

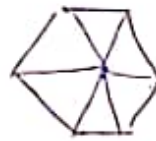
## 3D Computer Graphics



point  $n \times 3$

voxel. 3D grid (value 1 | 0).

mesh. triangle vertices.



} dens computation.

$\{(x, y, z) (x, y, b)\}$ .

$(r, \theta)$  parametric

rep. of circle.

better  $\rightarrow$  more informative.

Decision boundary

$\rightarrow$  inside.

$SDF > 0$

SDF

$\rightarrow$  signed distance function.

} Implicit Representation  
 $\downarrow$   
tries to learn continuous function.

obj, ply files  $\rightarrow$  for storing vertices

$\downarrow$  normal  $\downarrow$  binary encoded.

→ 3D reconstruction from image.

→ Reconstruction of multiview image. (NRF)

→ 3D reconstruction from Text  
text prompt → mesh.

Dream Fusion

→ Garment extraction  
from single image - (textured)  
not coloured.

→ Cloth simulation

→ uv mapping for texturization



2D texture → 3D Mesh.

Boundary first flattening.

closed surface (no boundary)

↓  
need to cut

→ Hand object interaction.

Meshlab. } library (GUI)

icp → iterative closest point → minimum diff

given 2 point ~~sets~~ clouds

formulation } Reconstruction

$\nabla \chi = h.$  (smooth gradient).

$\nabla^2 \chi = \nabla n$

$\Delta \chi = \nabla n$


② Open 3D.

tangent interpolation.

RGB & depth (A)

Intrinsic / Extrinsic  
matrix  
↓  
K  
↓  
intrinsic of camera.

RT

Rigid ICP →  how to make them coincide  
with just R & T.  
(iterative convergence).  
point cloud → 3D points sampled over a surface.

II model light + camera for realistic projection.

black hole visualization