

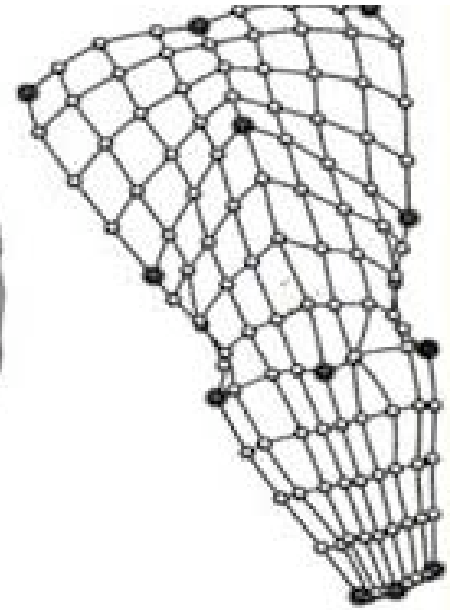
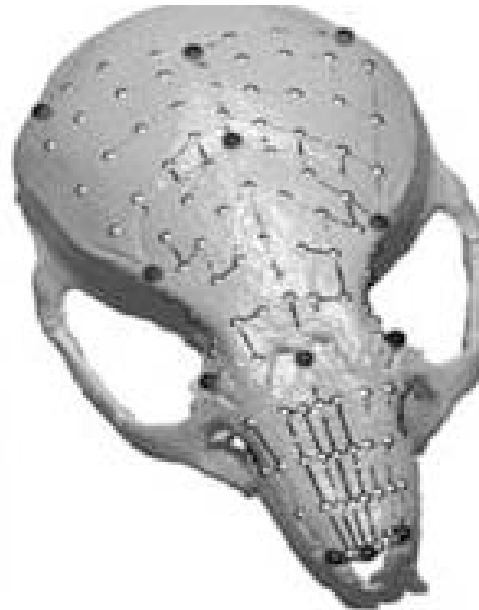
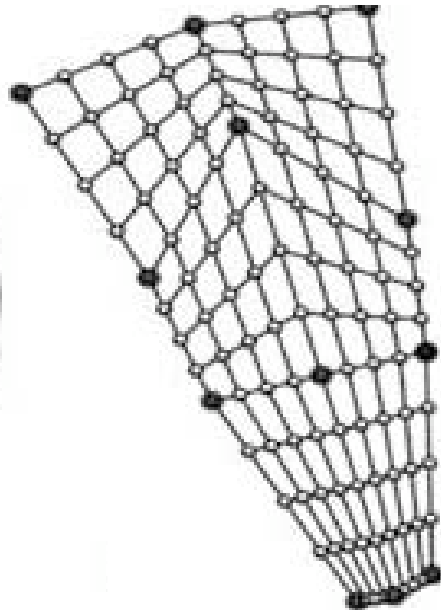
# **3D Mouse Head Mesh Landmarking Project**

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CSE 577

12/12/11

# Problem Statement



Skull with manual landmarks

Grid of semi-landmarks

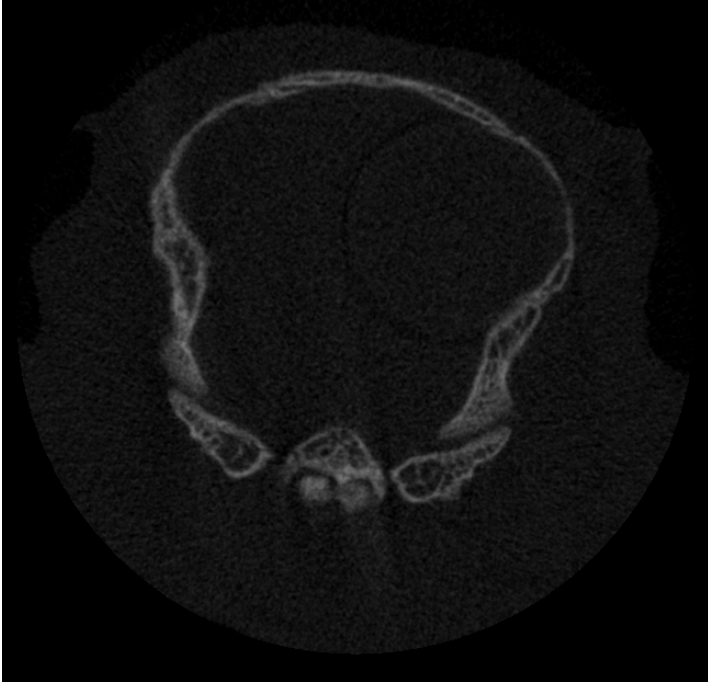
Original locations of semi-landmarks

Projected semi-landmarks

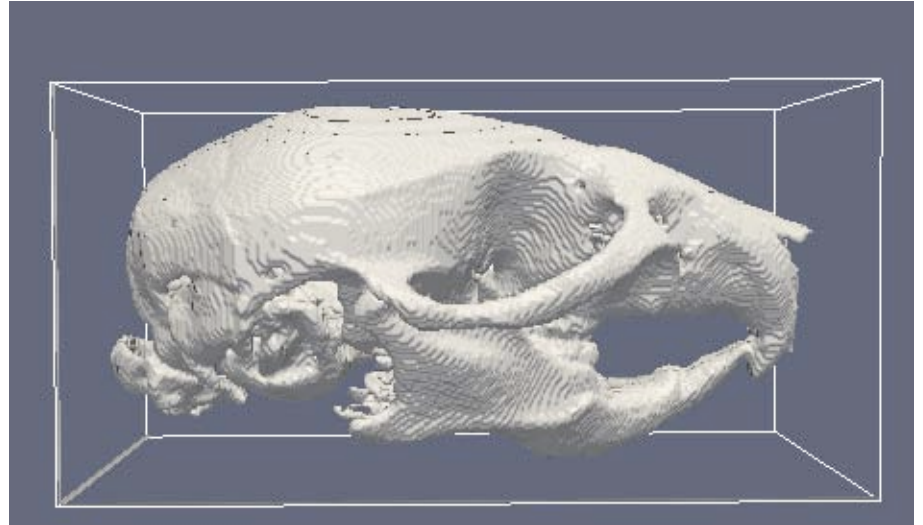
# Steps to solve problem

1. Find skull surface
2. Set up grid automatically
3. Project semi-landmarks onto surface

# Finding skull surface



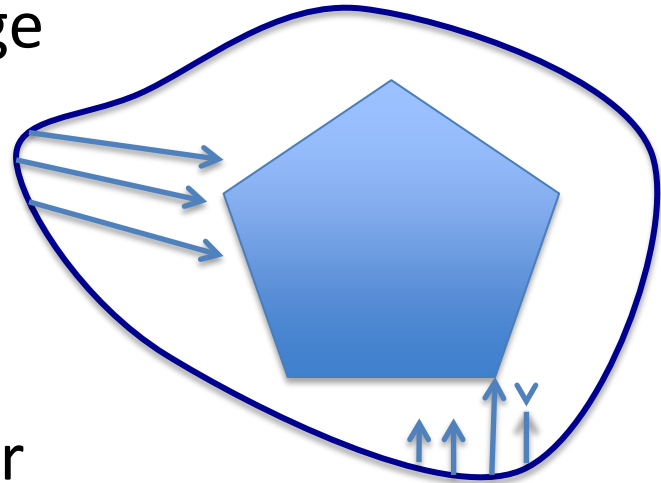
Slice of raw data



Contour extracted from image

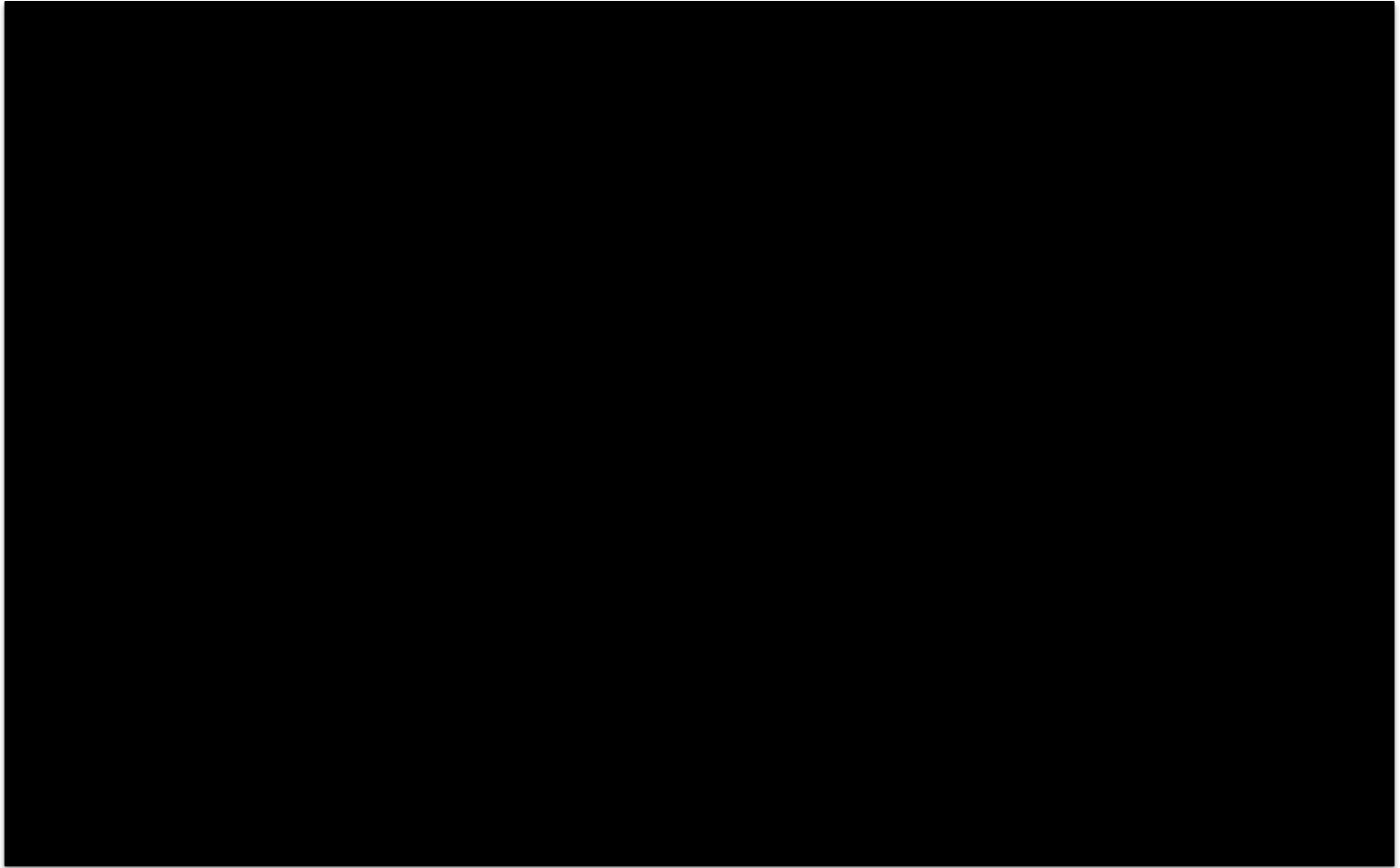
# Active Contours

- Method for detecting image boundaries
- Start with contour approximating image boundary
- Initial contour evolved over time according to “forces” calculated from image

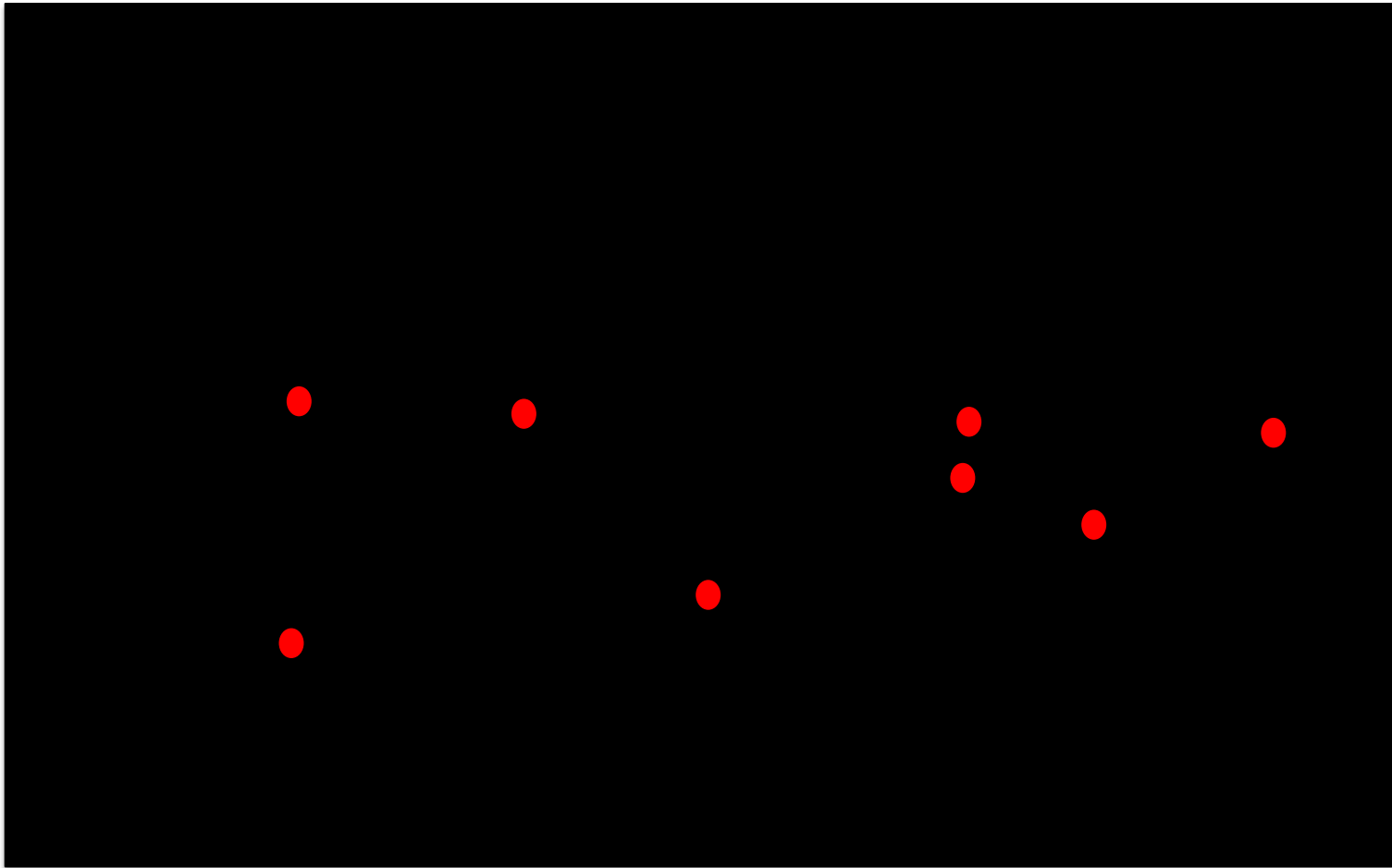


*Snakes: Active contour models*, Kass, M. and Witkin, A. and Terzopoulos, D.

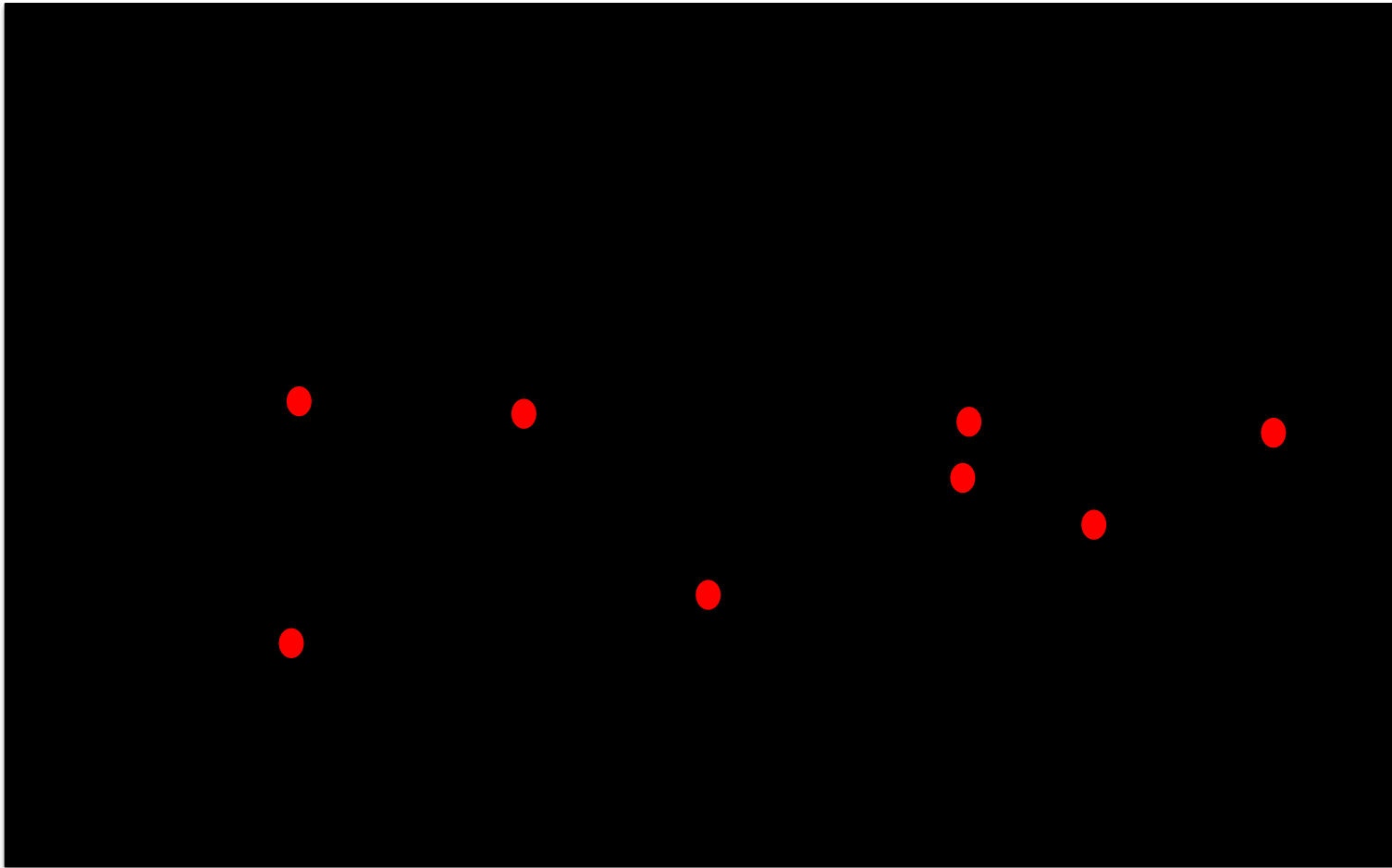
# Setting up the Grid



# Setting up the Grid

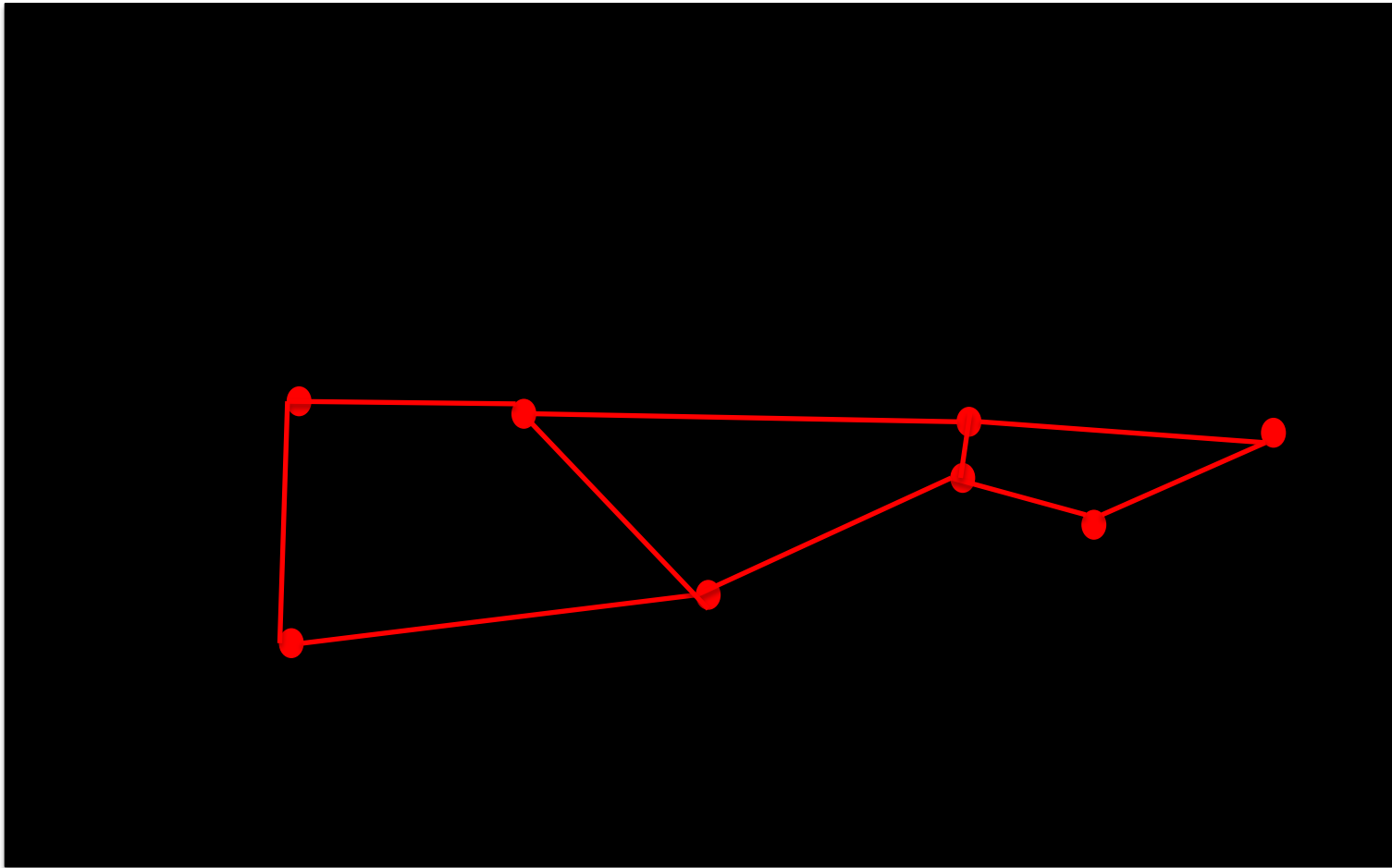


# Setting up the Grid

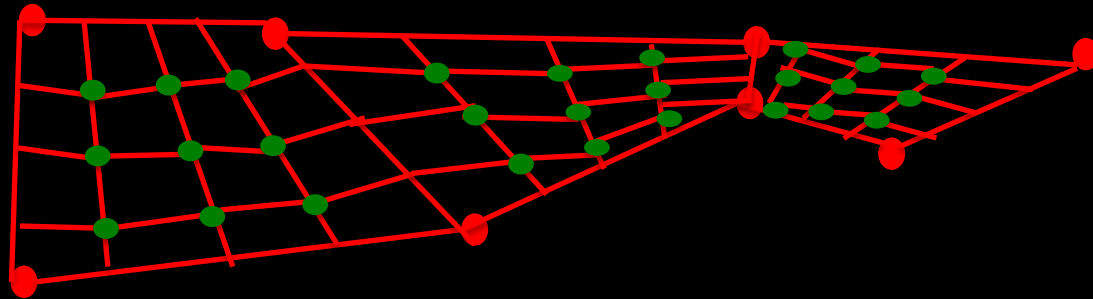




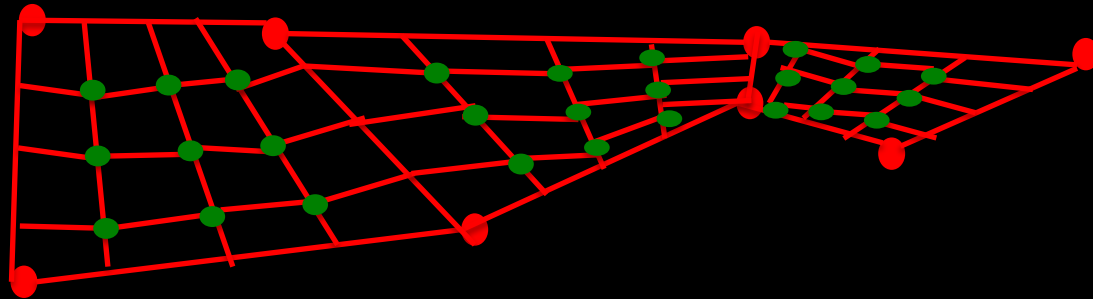
# Setting up the Grid



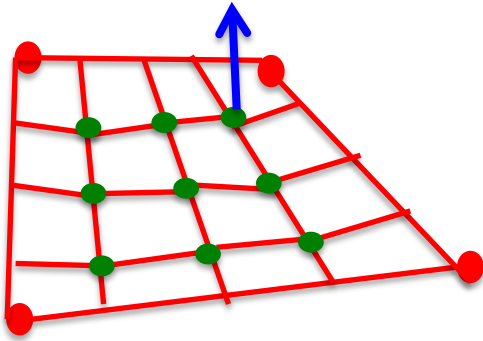
# Setting up the Grid



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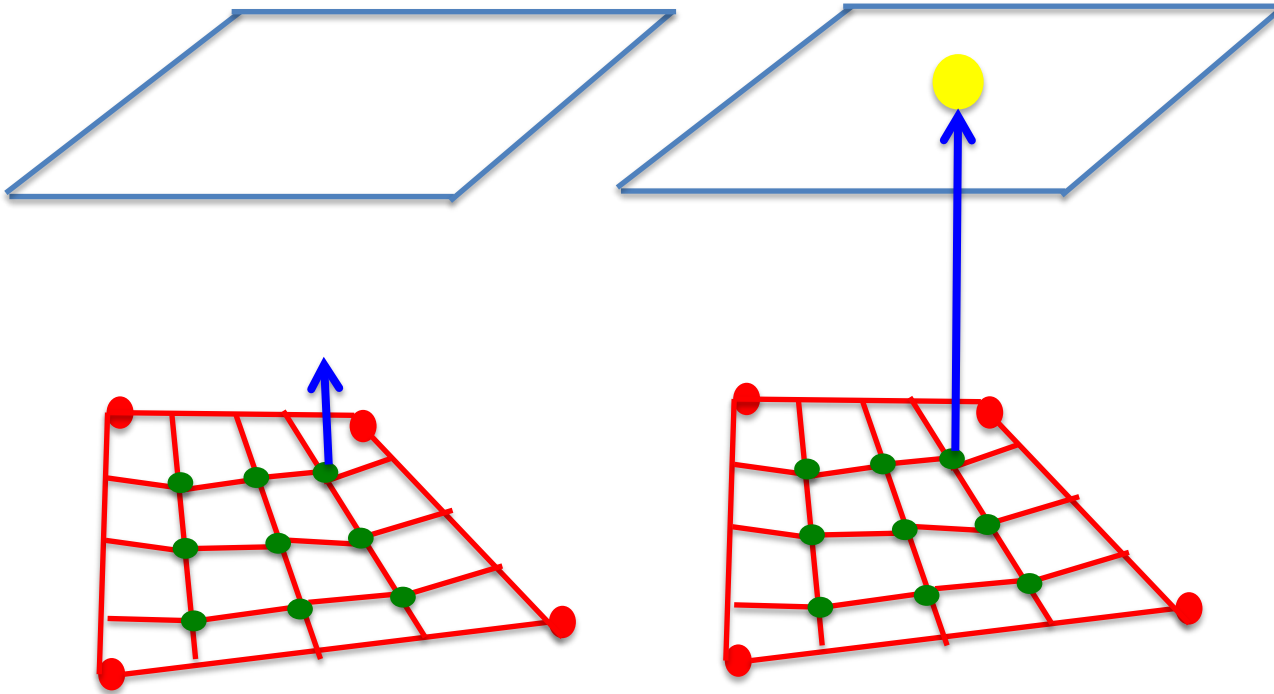


# Projecting Semi-landmarks



1. Find normal vectors at grid points

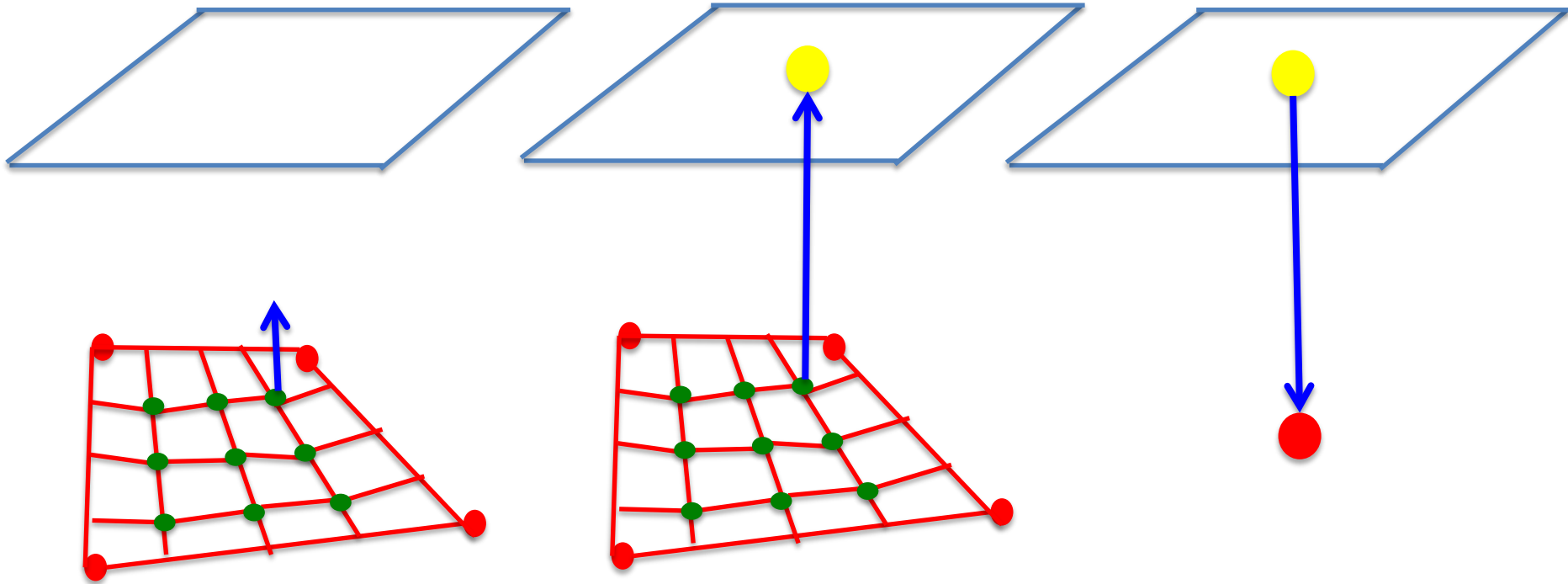
# Projecting Semi-landmarks



1. Find normal vectors at grid points

2. Project onto nearest bounding plane

# Projecting Semi-landmarks

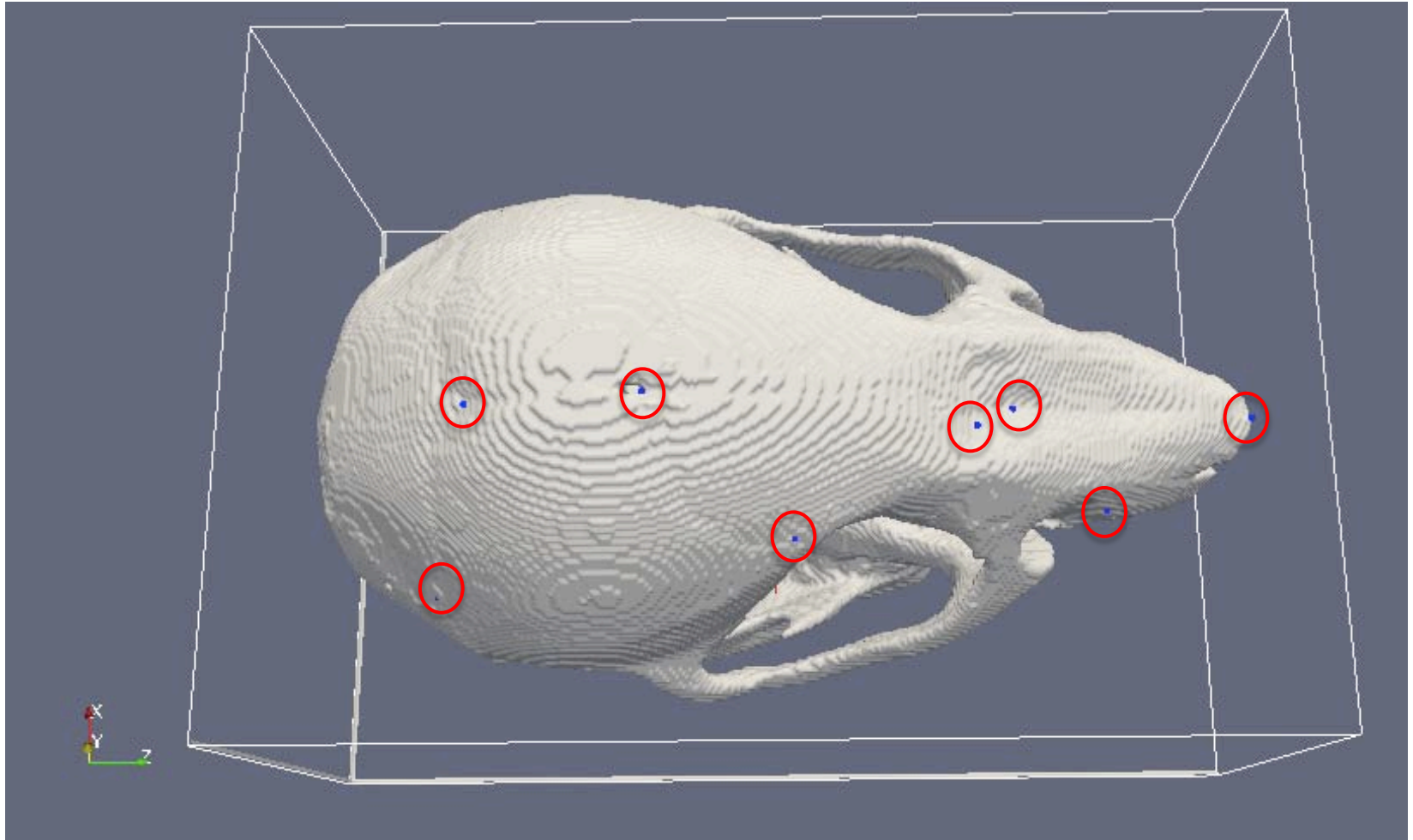


1. Find normal vectors at grid points

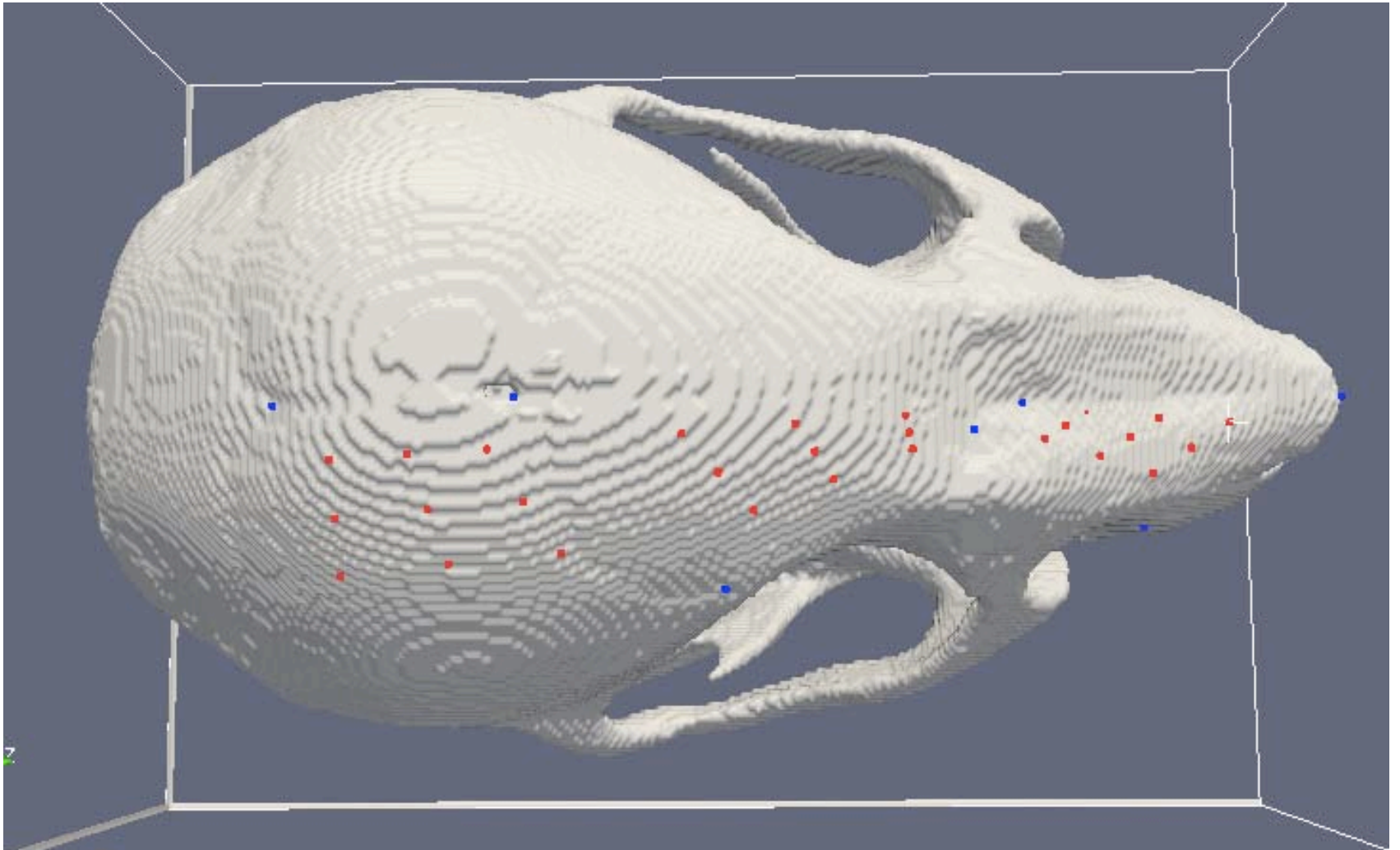
2. Project onto nearest bounding plane

3. Starting at bounding plane, find first intersection with surface

# Results

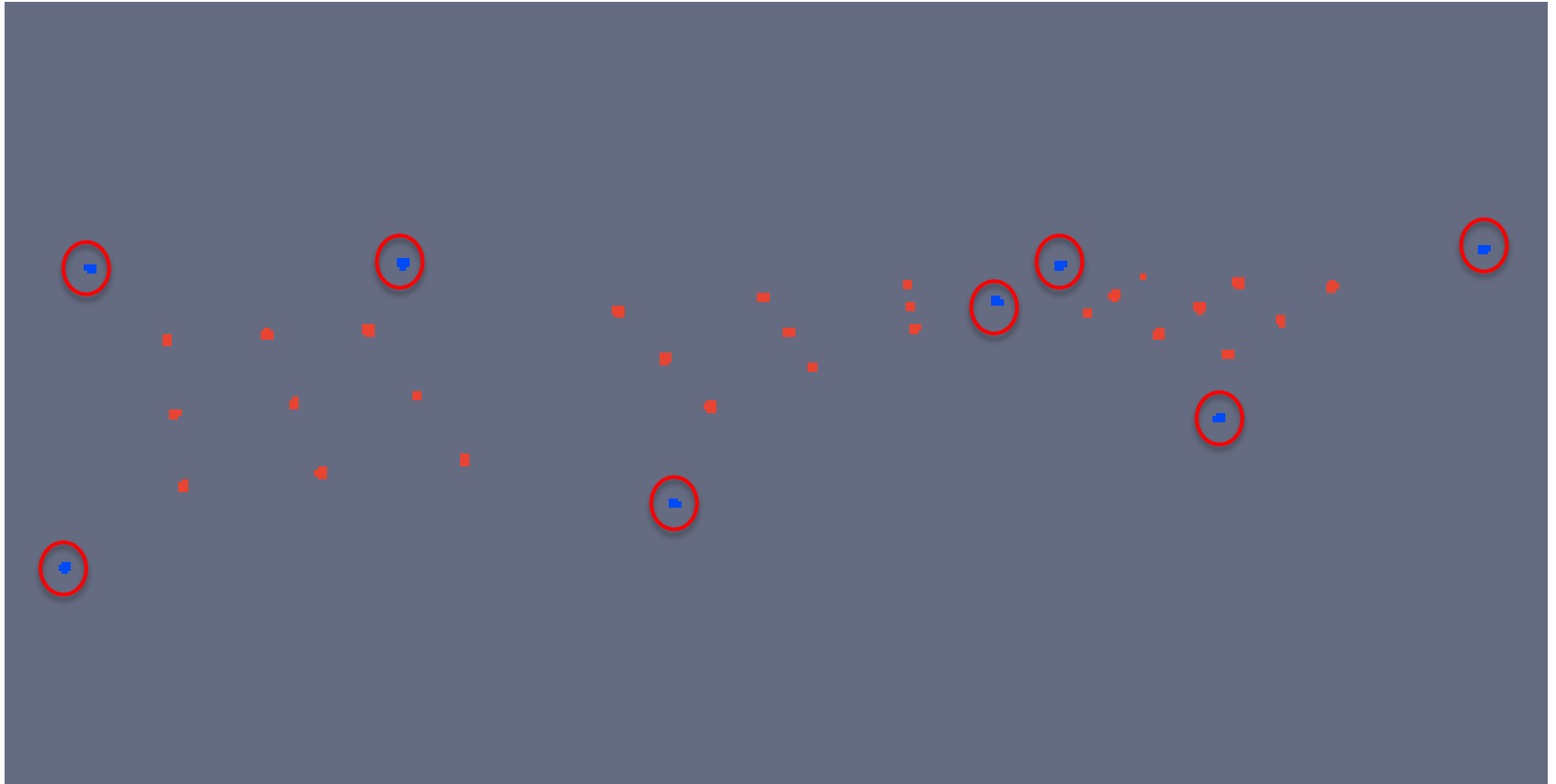


# Results





# Results



# Results

