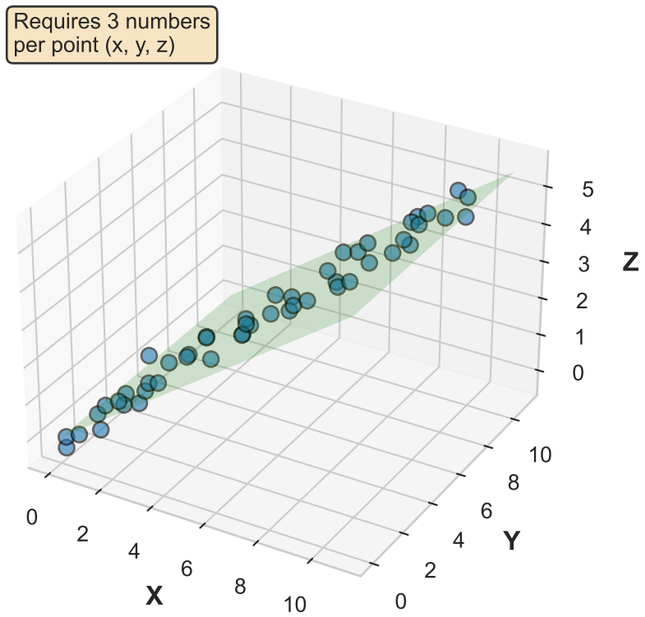
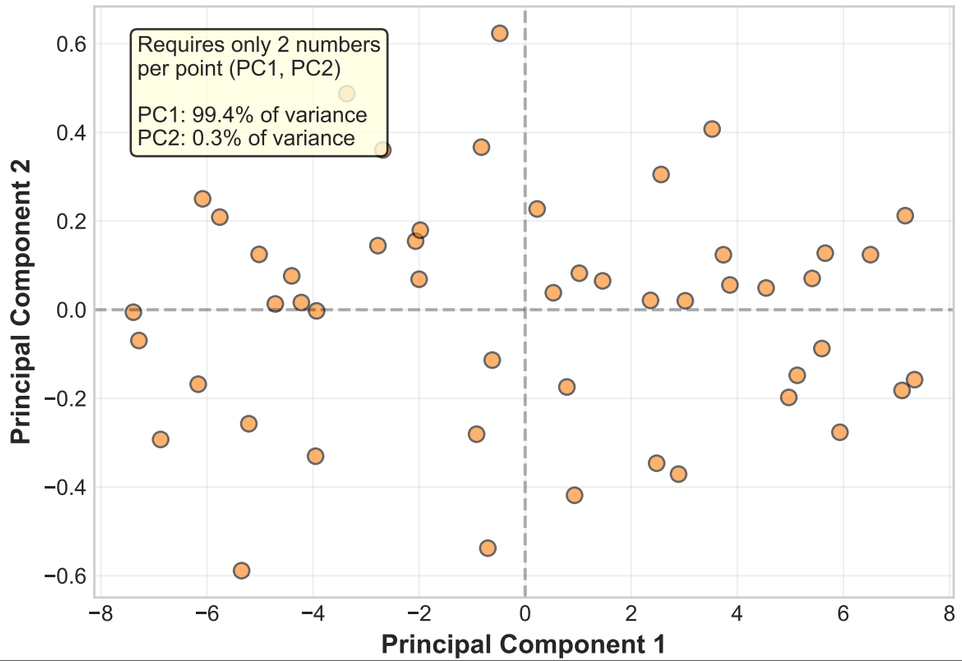
DIMENSIONALITY REDUCTION: Compressing 3D Data to 2D

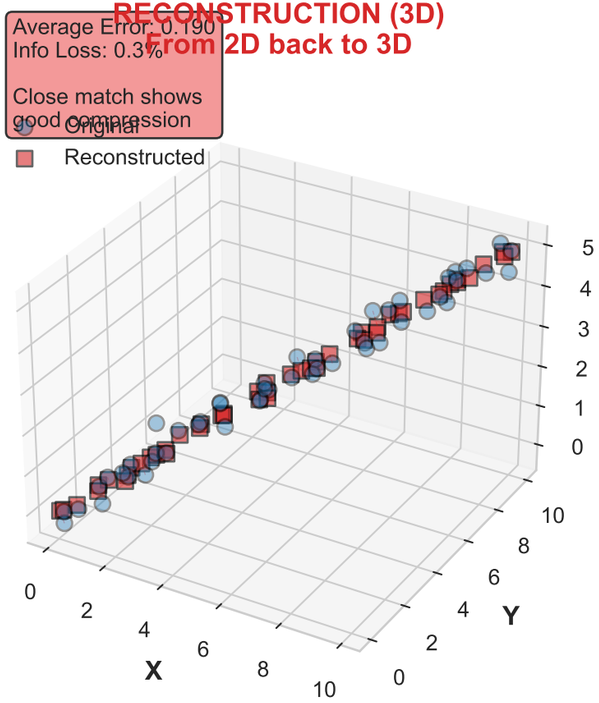
ORIGINAL DATA (3D)
Points near diagonal plane



PCA PROJECTION (2D)
Compressed representation



RECONSTRUCTION (3D)
From 2D back to 3D



DATA COMPRESSION PRINCIPLE: Points lying near a flat surface in 3D can be represented with 2D coordinates.
Left: Original data requires 3 numbers per point | Middle: Compressed to 2 numbers per point | Right: Reconstruction quality check