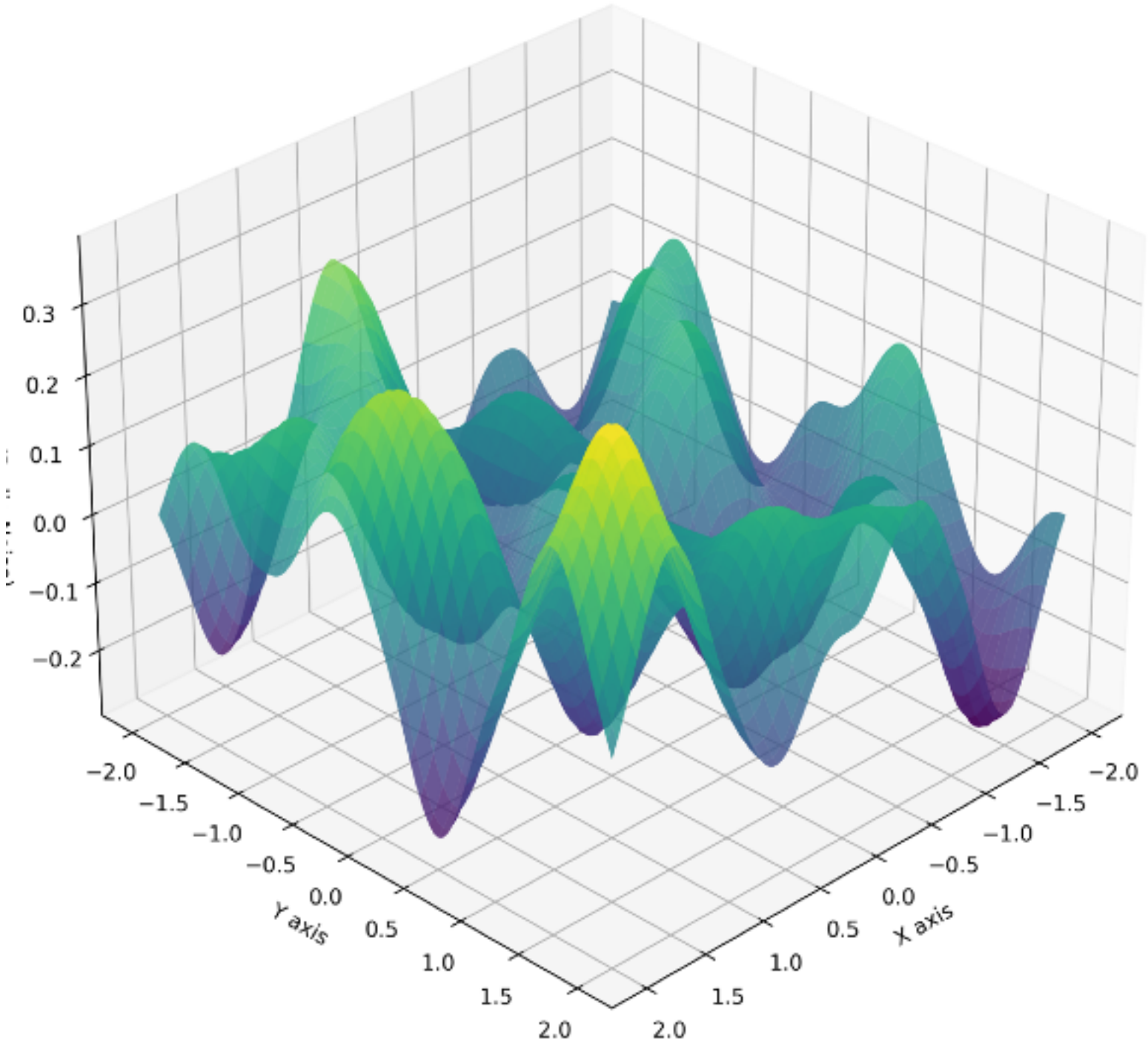
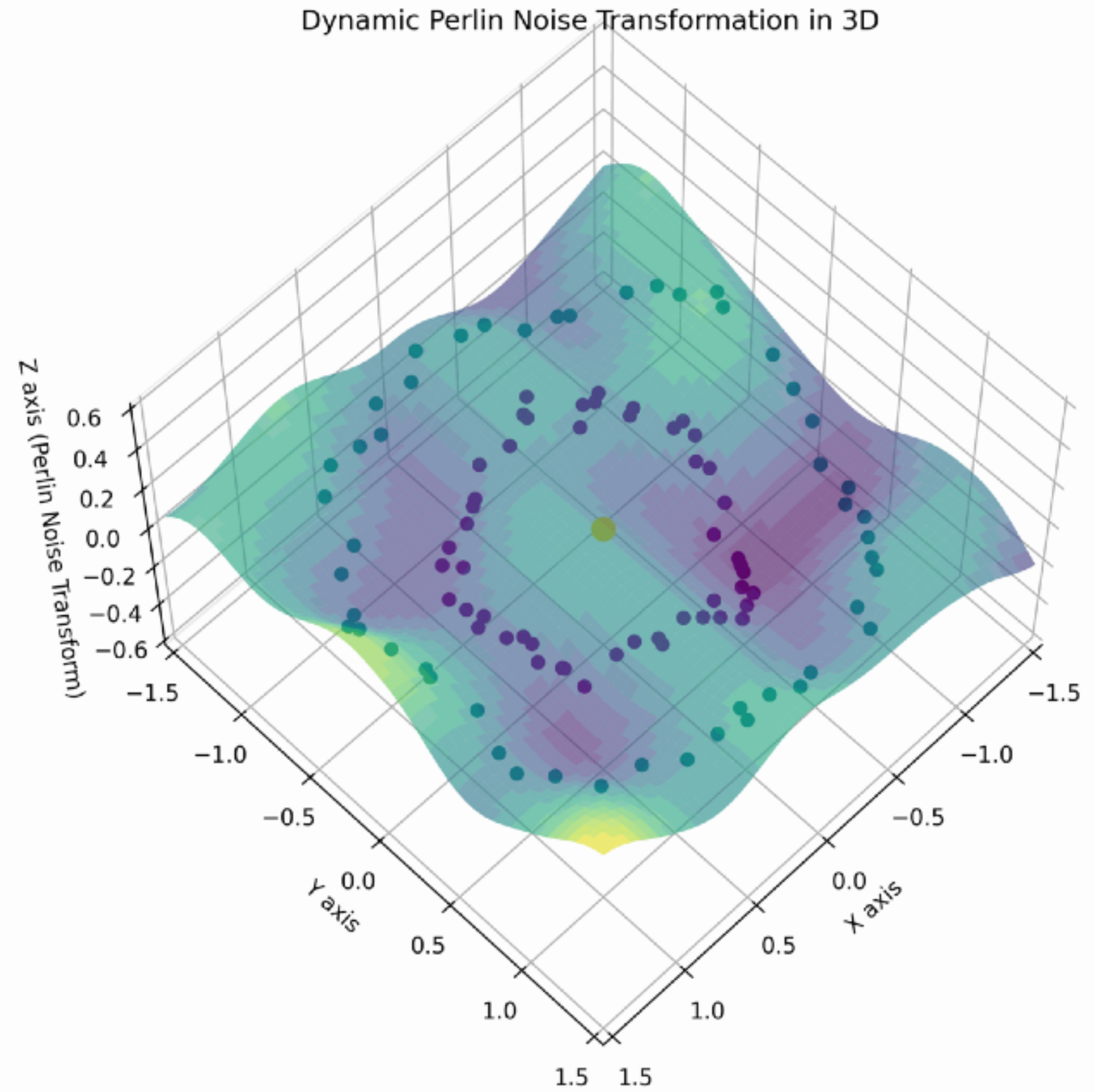
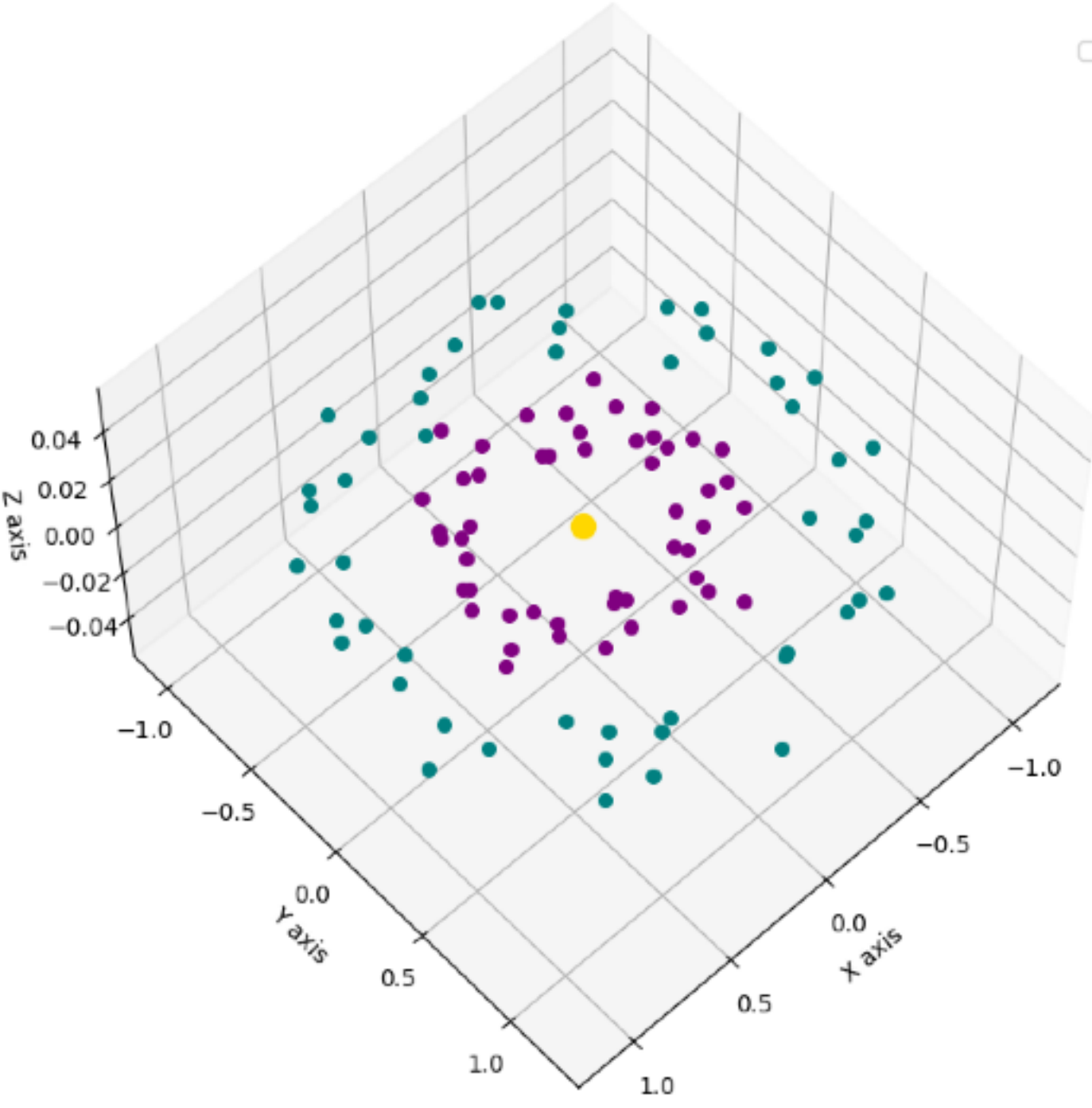
How to solve the non-linearity problem?

6


0.3
0.2
0.1
0.0
−0.1
−0.2
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
Y axis
X axis

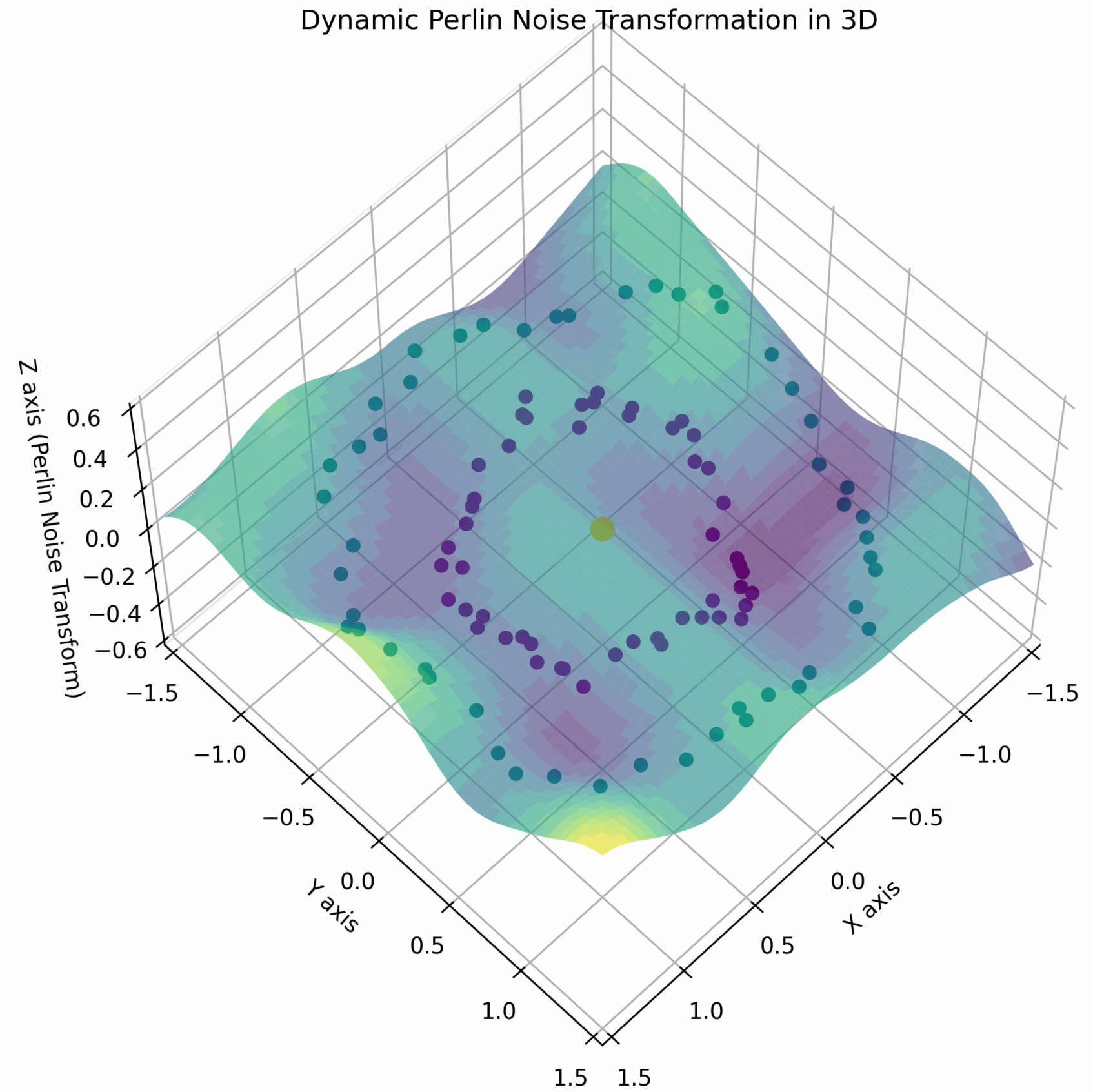

Dynamic Perlin Noise Transformation in 3D
Z axis (Perlin Noise Transform)
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
Y axis
X axis


0.04
0.02
0.00
−0.02
−0.04
Z axis
−1.0
−0.5
0.0
0.5
1.0
Y axis
−1.0
−0.5
0.0
0.5
1.0
X axis

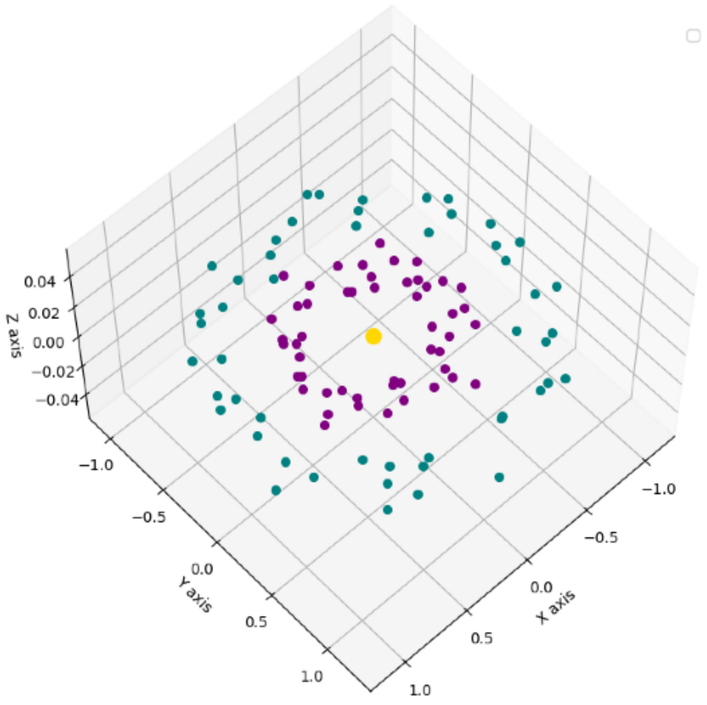
Example episode where class embeddings are not linearly seperabable

Searching for a non-linear transformation of the embedding space that allows linear seperability

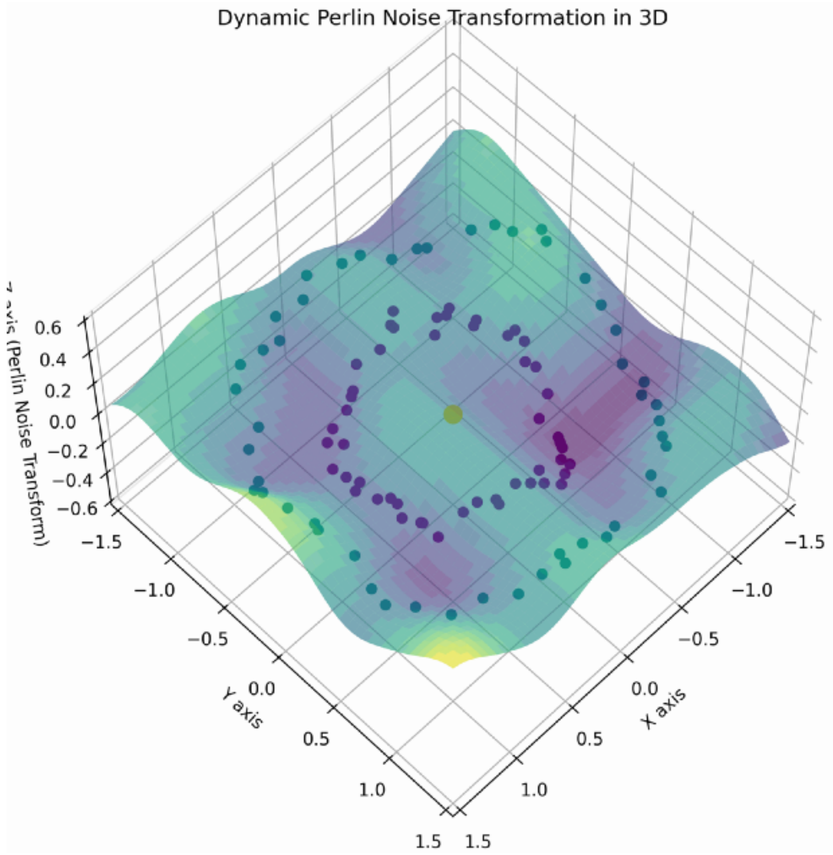
Non-linear of the embedding space that performs good across **all episodes**


Dynamic Perlin Noise Transformation in 3D
Z axis (Perlin Noise Transform)
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
Y axis
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
X axis
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5

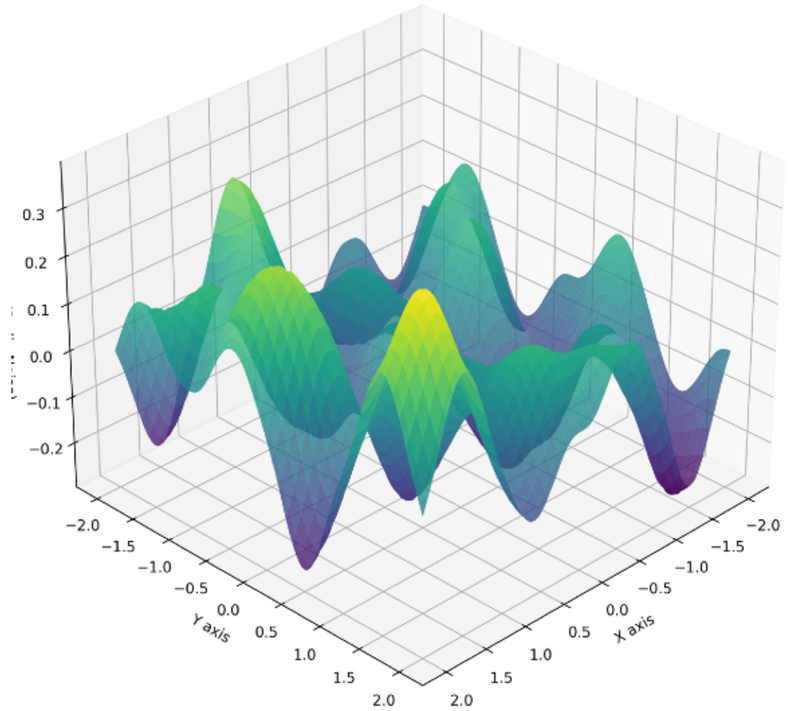
How to solve the non-linearity problem?



Example episode where class embeddings are not linearly seperabable



Searching for a non-linear transformation of the embedding space that allows linear seperability



Non-linear of the embedding space that performs good across **all episodes**

Relation Nets

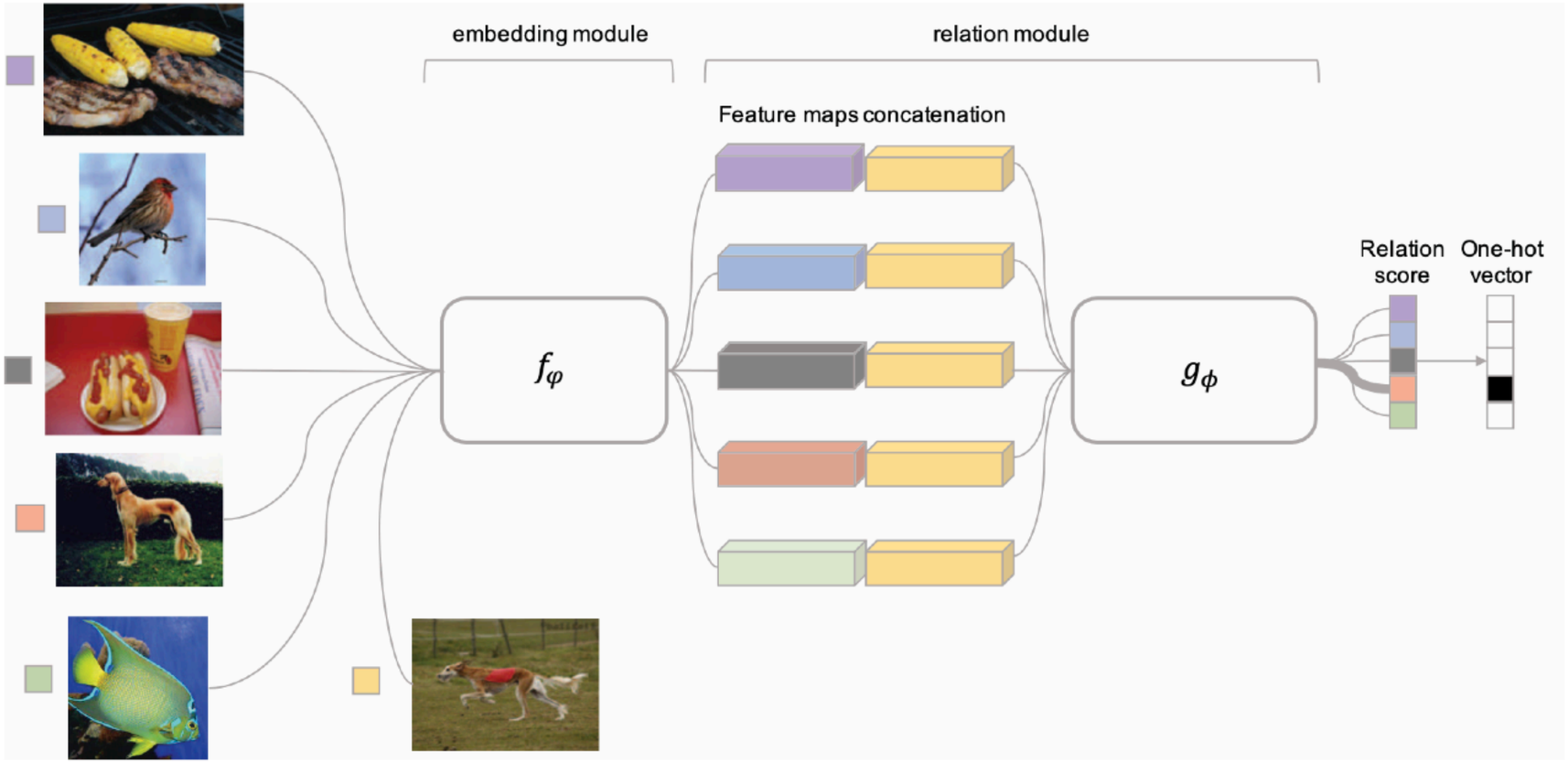


Figure 1: Relation Network architecture for a 5-way 1-shot problem with one query example.