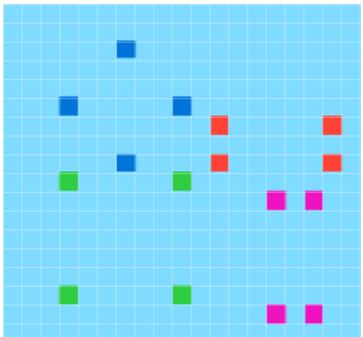
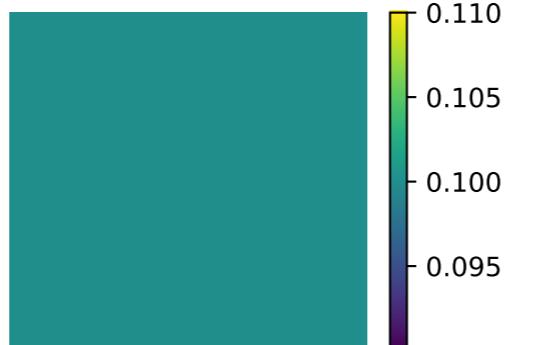


# CNN Feature Analysis: Grid 18×19

**Original Input**



One-Hot Embedding  
10 channels



Grid Size: 18×19 | CNN: 3 conv layers | Hidden Dim: 128

Layer Statistics:

EMBED: Ch=10, Size=(18, 19), Mean=0.100±0.284, Range=[0.00,1.00]  
Diversity=0.0908, Sparsity=0.900, Entropy=1.13

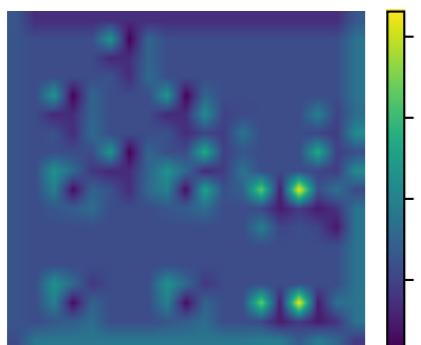
CONV1: Ch=32, Size=(18, 19), Mean=0.647±0.814, Range=[0.00,5.25]  
Diversity=0.2360, Sparsity=0.598, Entropy=3.35

CONV2: Ch=32, Size=(18, 19), Mean=0.272±0.420, Range=[0.00,6.18]  
Diversity=0.3411, Sparsity=0.738, Entropy=2.95

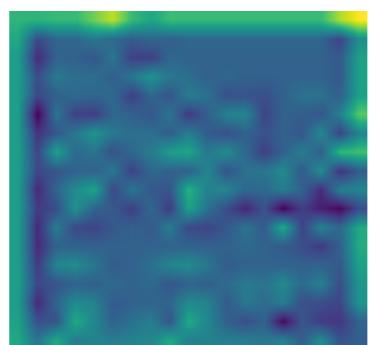
CONV3: Ch=32, Size=(18, 19), Mean=0.261±0.337, Range=[0.00,3.00]  
Diversity=0.2279, Sparsity=0.588, Entropy=4.04

SPATIAL\_FEATURES: Ch=32, Size=(18, 19), Mean=0.261±0.337, Range=[0.00,3.00]  
Diversity=0.2279, Sparsity=0.588, Entropy=4.04

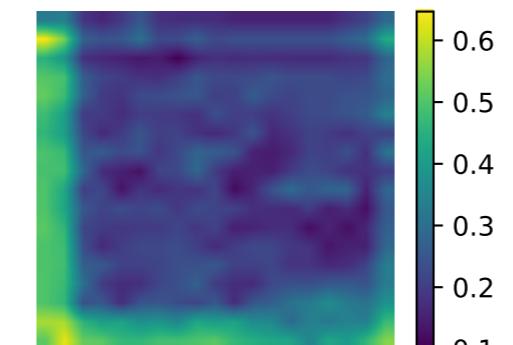
CONV1 Average  
1 channels



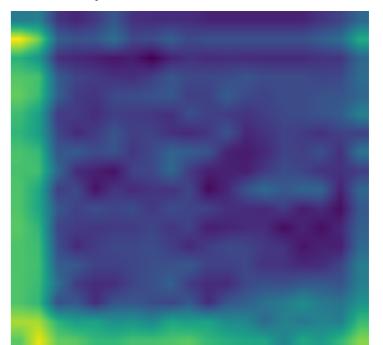
CONV2 Average  
1 channels



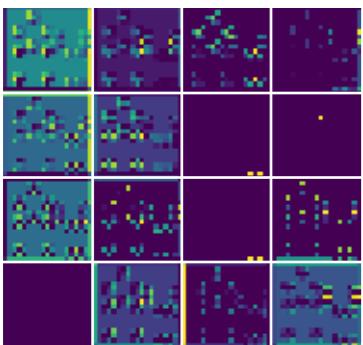
CONV3 Average  
1 channels



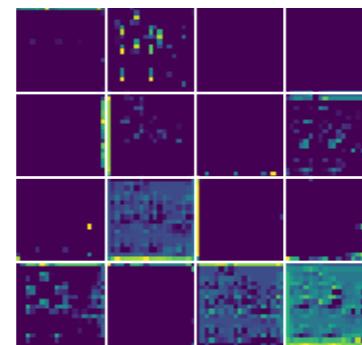
Spatial Features (avg)  
→ Input to Slot Attention



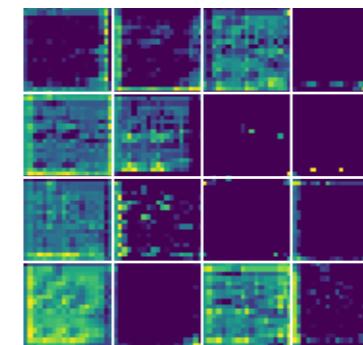
Feature Channels (showing 16/32)



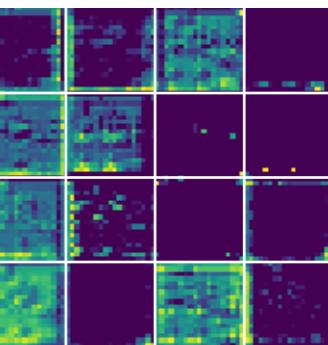
Feature Channels (showing 16/32)



Feature Channels (showing 16/32)



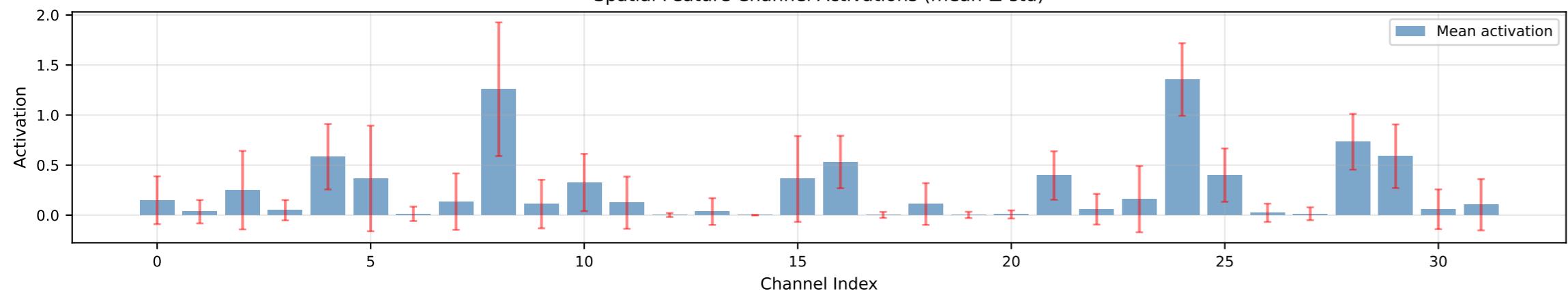
Feature Channels (showing 16/32)



## DIAGNOSIS SUMMARY:

- △ HIGH SPARSITY: Many dead neurons
- GOOD ENTROPY

Spatial Feature Channel Activations (mean ± std)



Spatial Location Similarity  
(sample of 50 locations)

