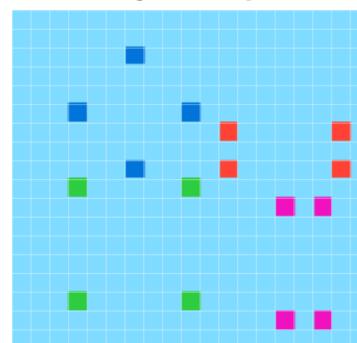
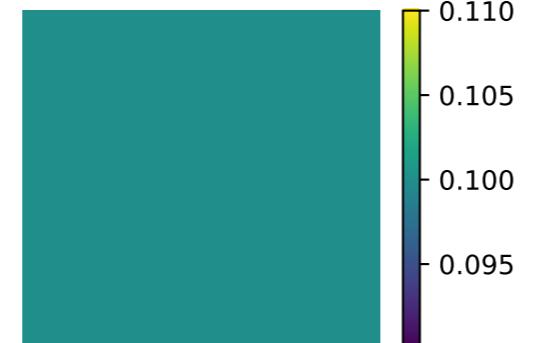


# CNN Feature Analysis: Grid 18×19

**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

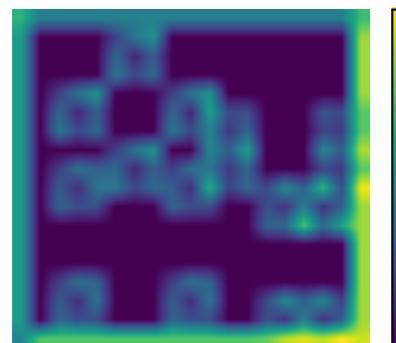
CONV1: Ch=128, Size=(18, 19), Mean=0.378±0.457, Range=[0.00, 5.95]  
Diversity=0.3998, Sparsity=0.674, Entropy=3.63

CONV2: Ch=128, Size=(18, 19), Mean=0.219±0.264, Range=[0.00, 5.45]  
Diversity=0.5260, Sparsity=0.730, Entropy=3.76

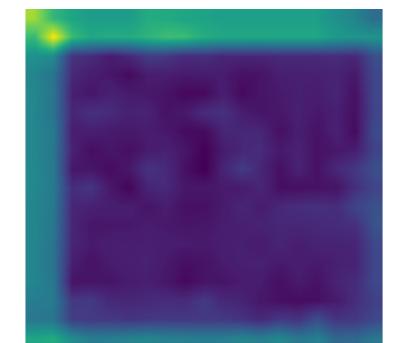
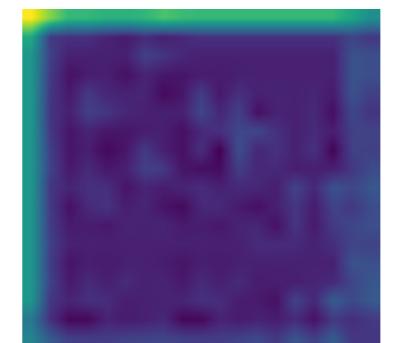
CONV3: Ch=128, Size=(18, 19), Mean=0.202±0.243, Range=[0.00, 5.29]  
Diversity=0.4485, Sparsity=0.672, Entropy=4.04

Spatial Features: Ch=128, Size=(18, 19), Mean=0.202±0.243, Range=[0.00, 5.29]  
Diversity=0.4485, Sparsity=0.672, Entropy=4.04

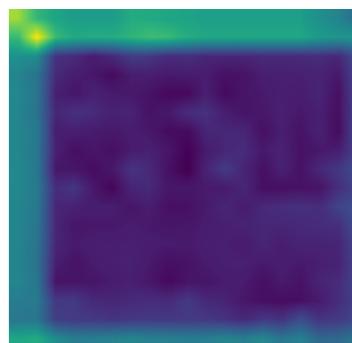
CONV1 Average  
1 channels



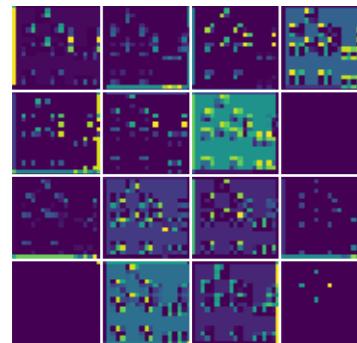
CONV2 Average  
1 channels



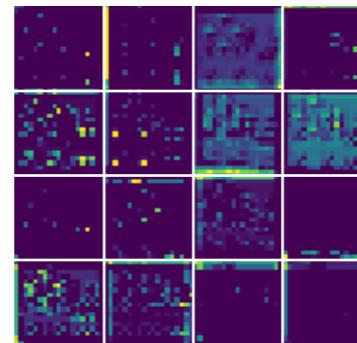
Spatial Features (avg)  
→ Input to Slot Attention



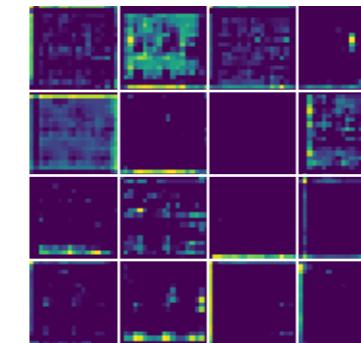
Feature Channels (showing 16/128)



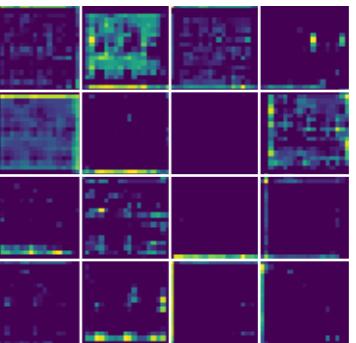
Feature Channels (showing 16/128)



Feature Channels (showing 16/128)



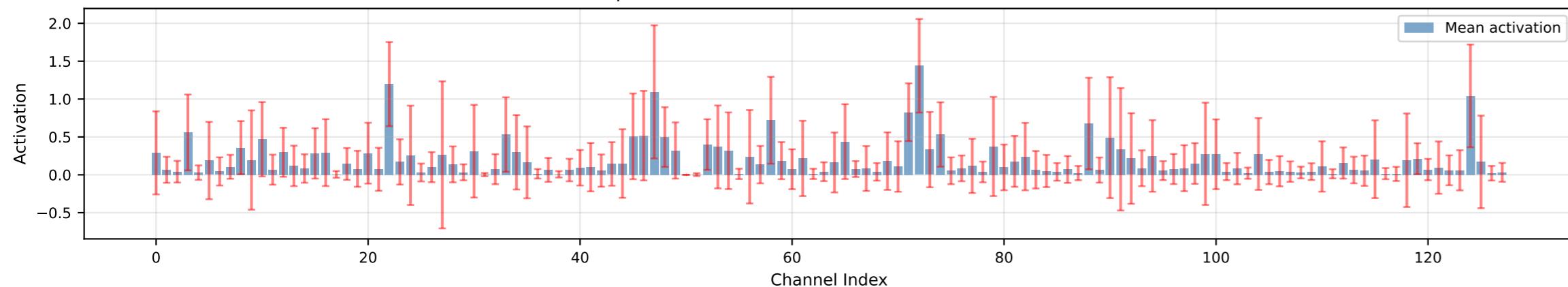
Feature Channels (showing 16/128)



## DIAGNOSIS SUMMARY:

- ⚠ HIGH SPARSITY: Many dead neurons
- GOOD ENTROPY

Spatial Feature Channel Activations (mean ± std)



Spatial Location Similarity  
(sample of 50 locations)

