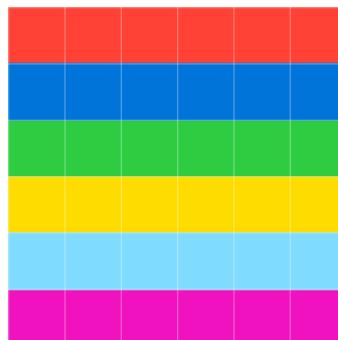
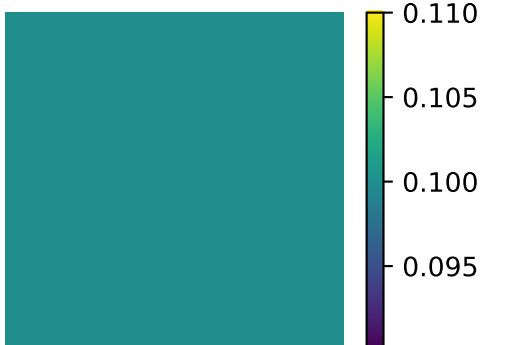


# CNN Feature Analysis: Grid 6x6

**Original Input**

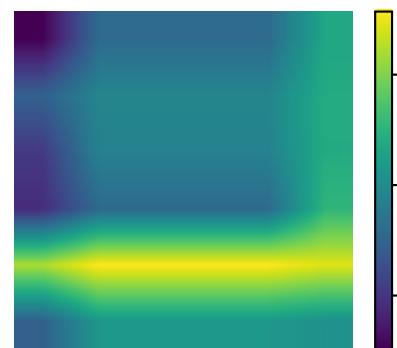


One-Hot Embedding  
10 channels

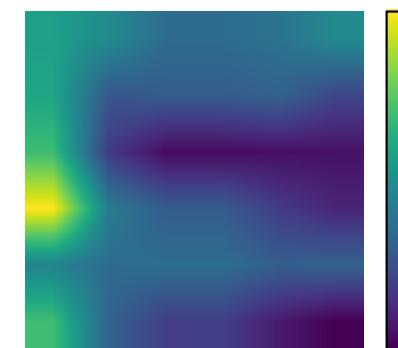


Grid Size: 6x6 | CNN: 3 conv layers | Hidden Dim: 128  
 Layer Statistics:  
 EMBED: Ch=10, Size=(6, 6), Mean=0.100±0.082, Range=[0.00, 1.00]  
 Diversity=0.8333, Sparsity=0.900, Entropy=1.08  
 CONV1: Ch=128, Size=(6, 6), Mean=0.612±0.330, Range=[0.00, 8.84]  
 Diversity=0.7223, Sparsity=0.652, Entropy=2.19  
 CONV2: Ch=128, Size=(6, 6), Mean=0.374±0.300, Range=[0.00, 6.52]  
 Diversity=0.7293, Sparsity=0.709, Entropy=2.00  
 CONV3: Ch=128, Size=(6, 6), Mean=0.376±0.251, Range=[0.00, 4.60]  
 Diversity=0.6343, Sparsity=0.590, Entropy=2.33  
 SPATIAL\_FEATURES: Ch=128, Size=(6, 6), Mean=0.376±0.251, Range=[0.00, 4.60]  
 Diversity=0.6343, Sparsity=0.590, Entropy=2.33

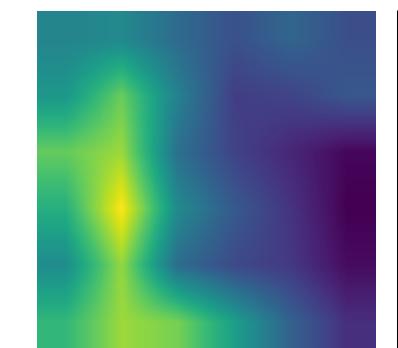
CONV1 Average  
1 channels



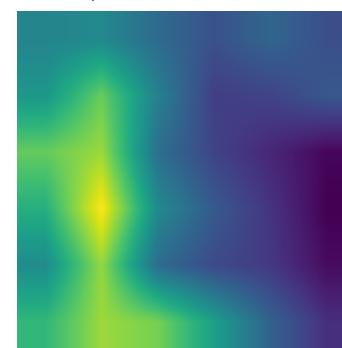
CONV2 Average  
1 channels



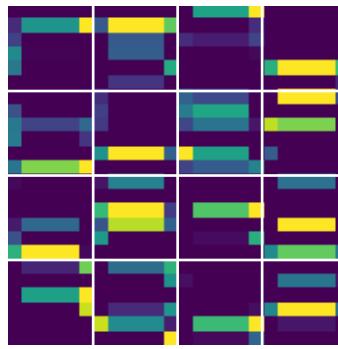
CONV3 Average  
1 channels



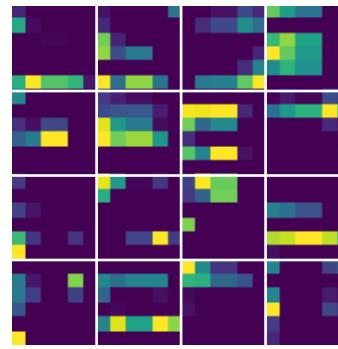
Spatial Features (avg)  
→ Input to Slot Attention



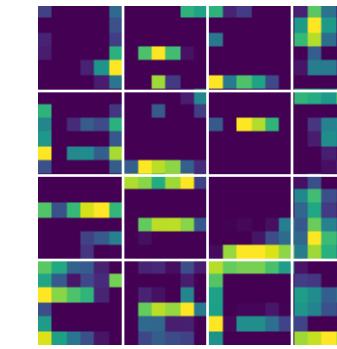
Feature Channels (showing 16/128)



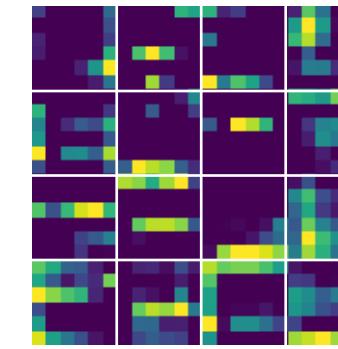
Feature Channels (showing 16/128)



Feature Channels (showing 16/128)



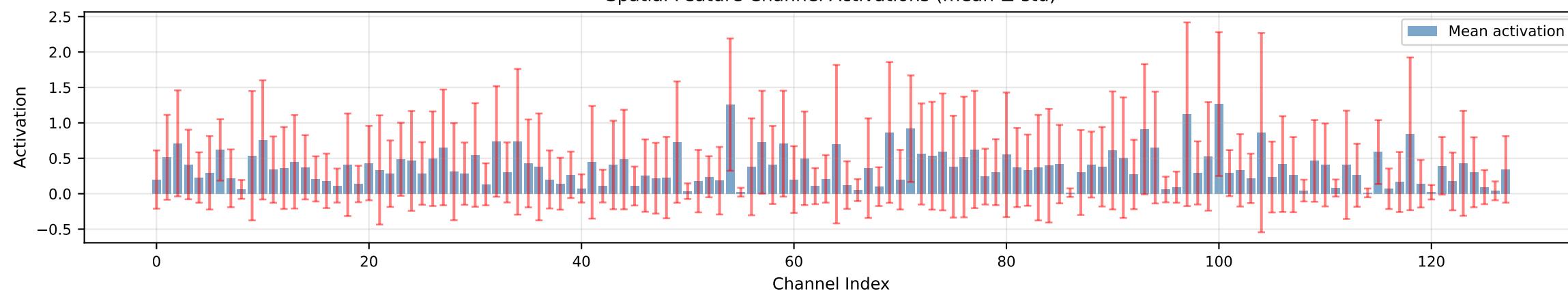
Feature Channels (showing 16/128)



## DIAGNOSIS SUMMARY:

- GOOD DIVERSITY
- △ HIGH SPARSITY: Many dead neurons
- GOOD ENTROPY

Spatial Feature Channel Activations (mean ± std)



Spatial Location Similarity  
(sample of 36 locations)

