Detailed Neural Network Architecture

Model Performance:
• Parameters: 1,904,394
• Training Loss: 0.100 → 0.011
• Test Correlation: 0.5969
• PSNR: ~20 dB
• SSIM: ~0.6
• Training Time: ~3 minutes

fMRI Input
3092

Input Projection
512

Transformer Encoder (3 layers)
512

Spatial Attention
512

Transformer Decoder (6 layers)
512

Hidden Layer 1
256

Hidden Layer 2
128

Output Layer
784

Multi-Head Attention Mechanism

• Query, Key, Value projections
• 8 attention heads
• Positional encoding
• Cross-attention for fMRI-stimulus alignment