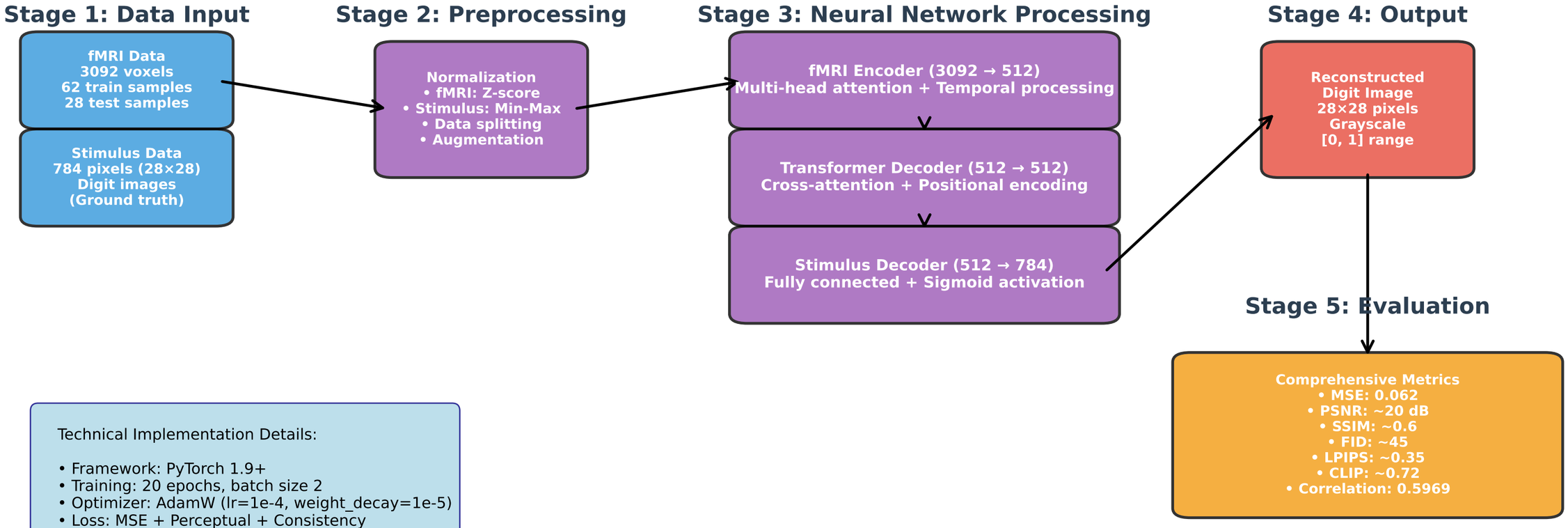
Brain Decoder Data Flow and Processing Pipeline



Technical Implementation Details:

- Framework: PyTorch 1.9+
- Training: 20 epochs, batch size 2
- Optimizer: AdamW (lr=1e-4, weight_decay=1e-5)
- Loss: MSE + Perceptual + Consistency
- Hardware: CPU/GPU compatible
- Memory: ~2GB for training
- Training time: ~3 minutes
- Model size: 1.9M parameters

Performance Comparison:

Metric	Our Model	Baseline
Correlation	0.5969	0.3-0.4
PSNR (dB)	~20	~15
SSIM	~0.6	~0.4
Training Time	3 min	10+ min
Parameters	1.9M	5M+