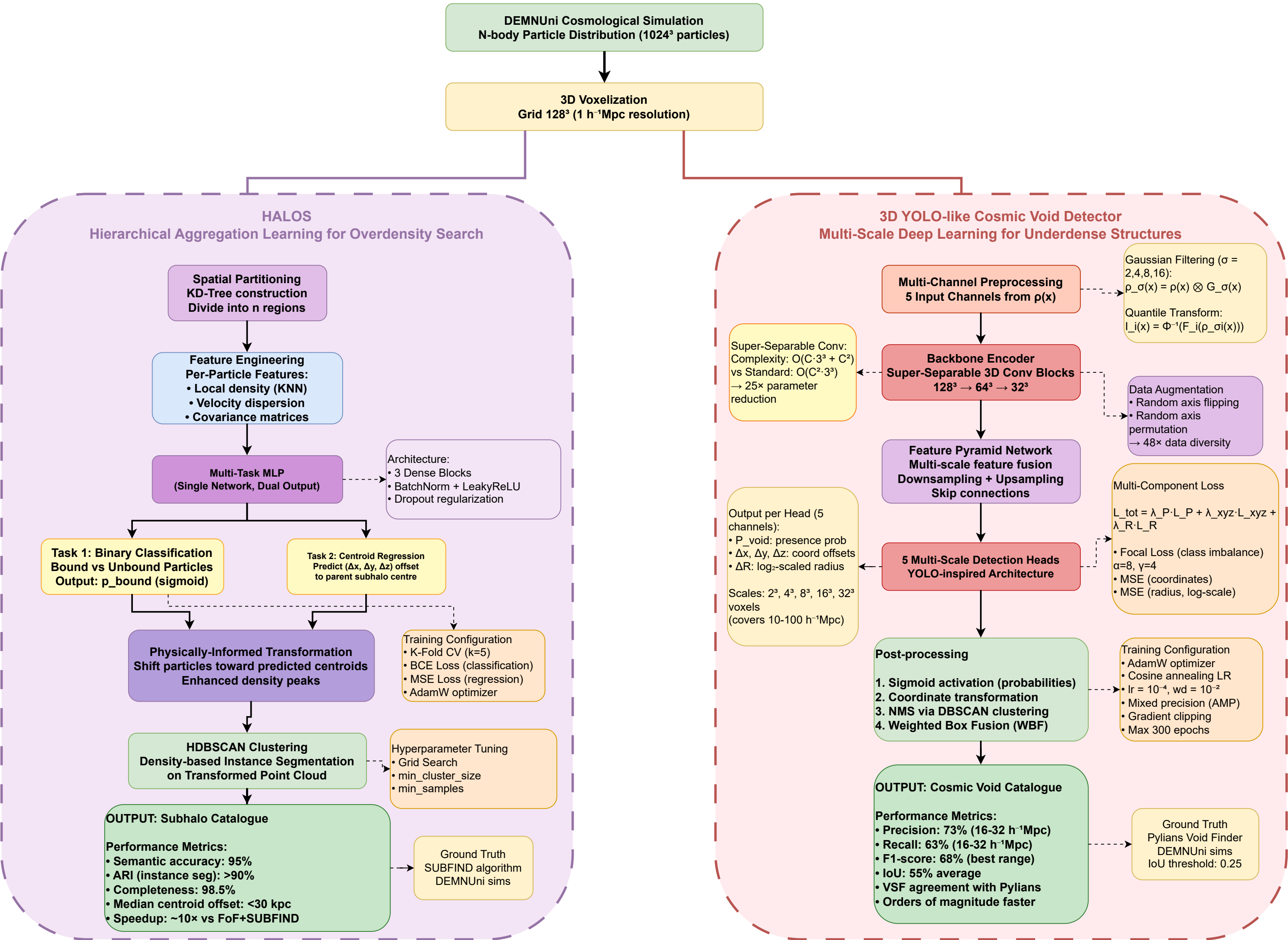


DeepCosmoNet Training Pipeline workflow



Legend & Key Information

Preprocessing

Neural Network

Train Loss

Post-processing

Final Output

Validation/Config

• Both projects use DEMNUi simulation (1024^3 particles, 1 Gpc^3)

• HALOS: Instance segmentation of halos/subhalos

• 3D Voids: Object detection of cosmic voids (multi-scale)

• Both achieve significant computational speedup vs traditional methods

• Common voxelization: 128^3 grid at $1 \text{ h}^{-1}\text{Mpc}$ resolution

• Training: Both use GPU acceleration and advanced optimization