

hist

Unified digital pathology pipeline with a single CLI entry point.

Installation

```
pip install -e .
```

Usage

1) Tiling (train split)

```
hist tile \  
  --slides data/wss1_v2/out/train/slides \  
  --annos data/wss1_v2/anno \  
  --out data/wss1_v2/out/train \  
  --patch-size 224 --stride 224 \  
  --overwrite
```

2) Feature extraction (ViT-B/16 @224)

```
hist extract \  
  --csv-dir data/wss1_v2/out/train/patch_csvs \  
  --output saves/features_vit224 \  
  --encoder vit_b16 --device cuda \  
  --batch-size 256 --num-workers 8
```

3) Train Hierarchical MIL with 5-fold CV

```
hist train \  
  --features saves/features_vit224 \  
  --labels-csv data/wss1_v2/out/train/labels.csv \  
  --output saves/experiments/hiermil_vit224 \  
  --model hiermil --epochs 20 --k-folds 5 \  
  --device cuda --oversample
```

4) Compare models (ABMIL, TransMIL, HierMIL, GCN/GAT)

```
hist compare \  
  saves/experiments/abmil_vit224 \  
  /
```

```
saves/experiments/transmil_vit224 \  
saves/experiments/hiermil_vit224 \  
--out saves/comparison_vit224 \  
--metrics balanced_accuracy f1_macro roc_auc mcc
```

5) Explainability (attention overlays and t-SNE)

```
hist explain \  
  --runs    saves/experiments/hiermil_vit224 \  
  --out     saves/experiments/hiermil_vit224/explain
```

Testing

```
pytest
```