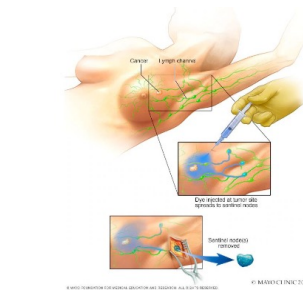# Detecting Cancer in Gigapixel Medical Images
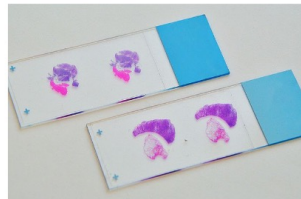
Final Project for ADL, Fall 2022

Ran Pan, Megan Zhou

Background and motivation

- Pathologists make mistakes when diagnosing biopsied tissues

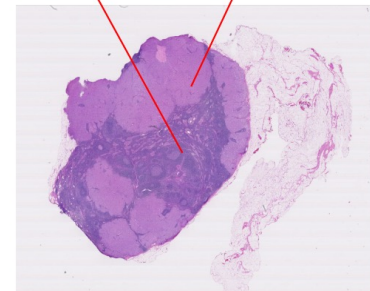- Assist human expertise

- Reduce misdiagnosis rate

biopsy

Preparation

Diagnosis → Treatment plan
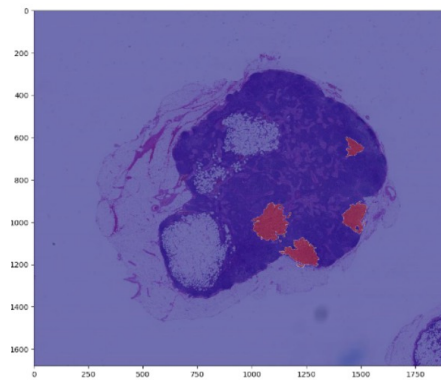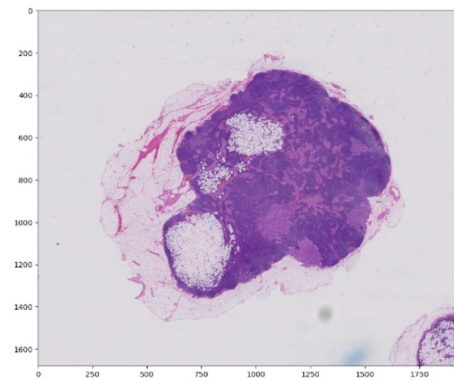
healthy vs tumor

Visual inspection

Data Source

- CAMELYON16 challenge

- 400 images from 2 institutions
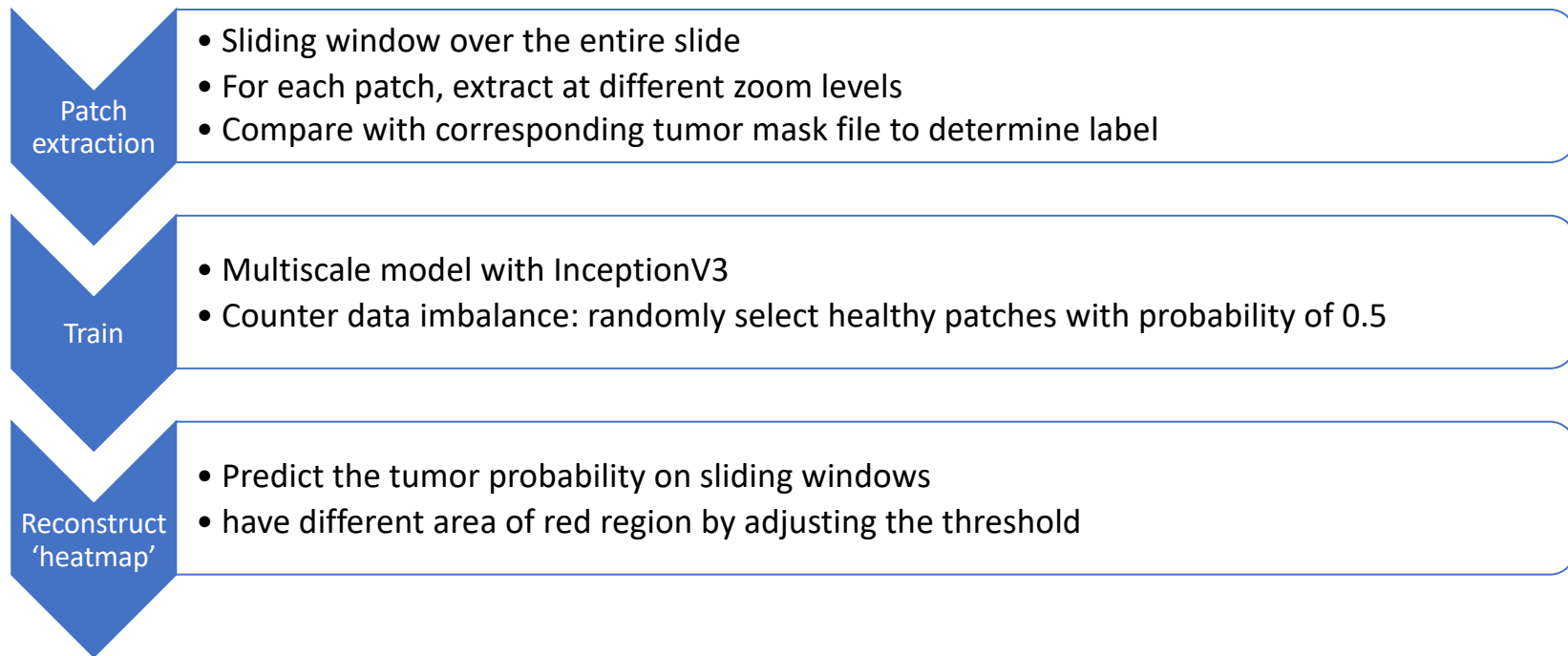
- 8 levels of magnification (0 to 7)

Ground truth

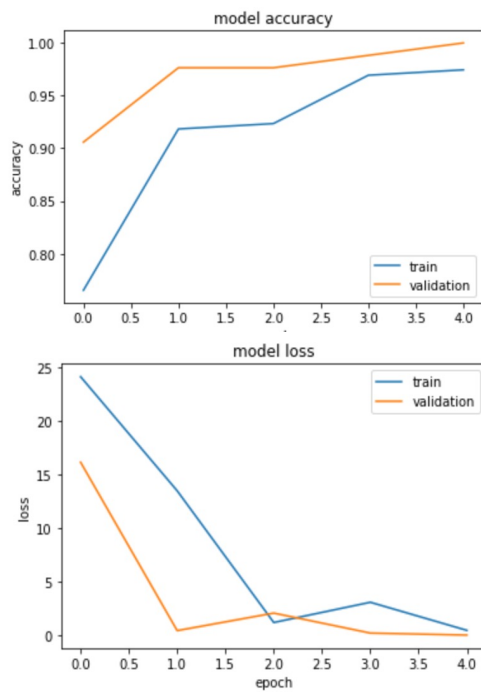slide

Methodology

Patch extraction
- Sliding window over the entire slide
- For each patch, extract at different zoom levels
- Compare with corresponding tumor mask file to determine label

Train
- Multiscale model with InceptionV3
- Counter data imbalance: randomly select healthy patches with probability of 0.5

Reconstruct 'heatmap'
- Predict the tumor probability on sliding windows
- have different area of red region by adjusting the threshold

Result

Model result:

Heatmap generation: