MAYO CLINIC

PREDICTING STROKE ETIOLOGY FROM IMAGING OF BLOOD CLOTS

SAM OLIVER - FREELANCE DATA SCIENTIST
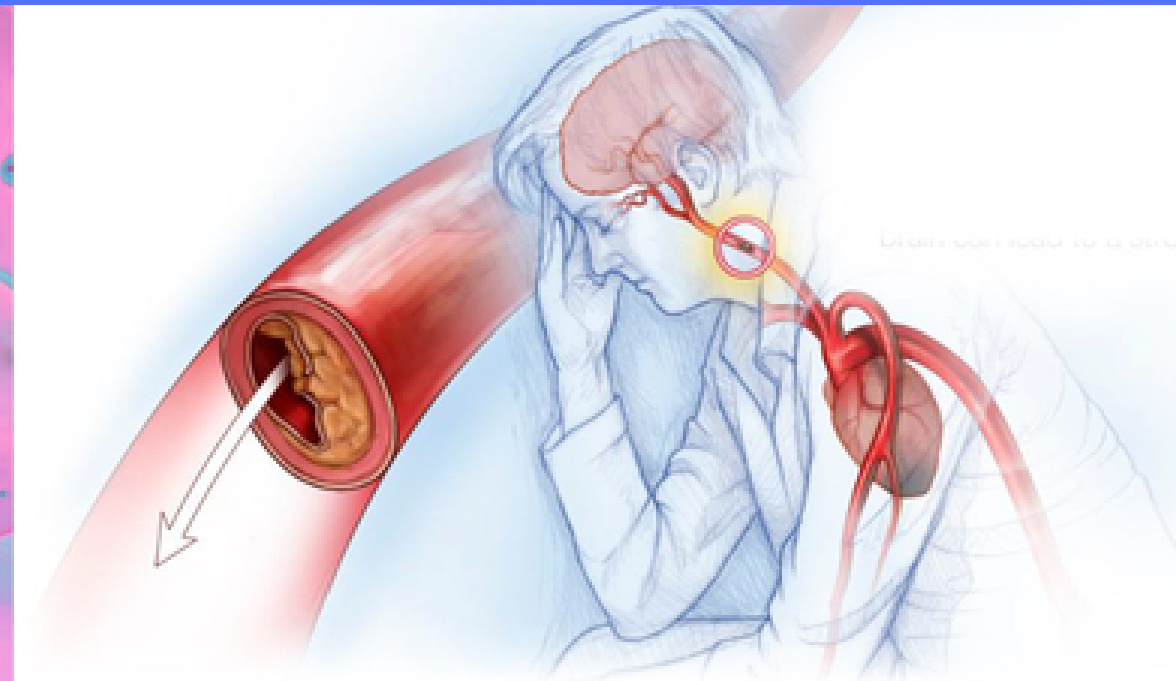
STRIP AI
STROKE THROMBOEMBOLISM REGISTRY OF IMAGING AND PATHOLOGY
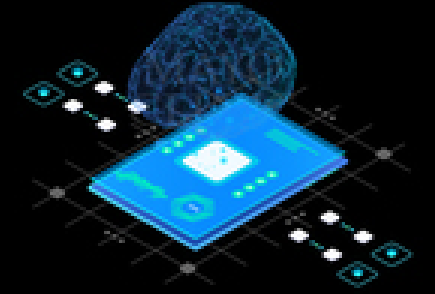
MAYO CLINIC

- BACKGROUND
- DATA

- METHODS
- MODEL RESULTS
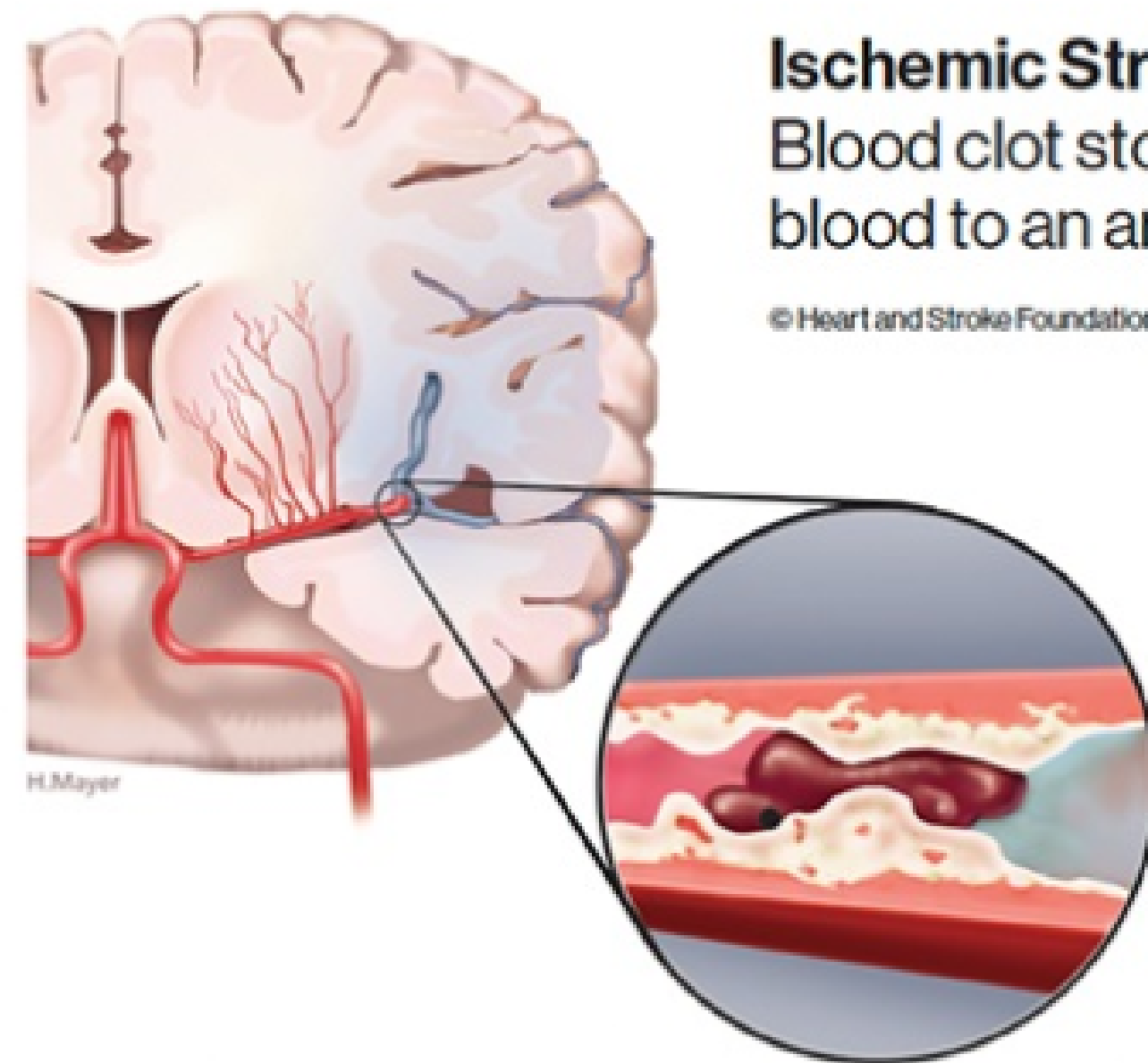- THE DIAGNOSTIC TOOL

- FURTHER RECOMMENDATIONS
- CONTACT DETAILS

BACKGROUND

- 700K STROKES / YR IN US
- MAYO CLINIC + KAGGLE

GOALS

- **PREDICT TYPE OF STROKE** FROM EXTRACTED CLOT IMAGE
- CREATE DIAGNOSTIC TOOL TO ASSIST THE MAYO CLINIC WITH DIAGNOSIS OF PATIENTS
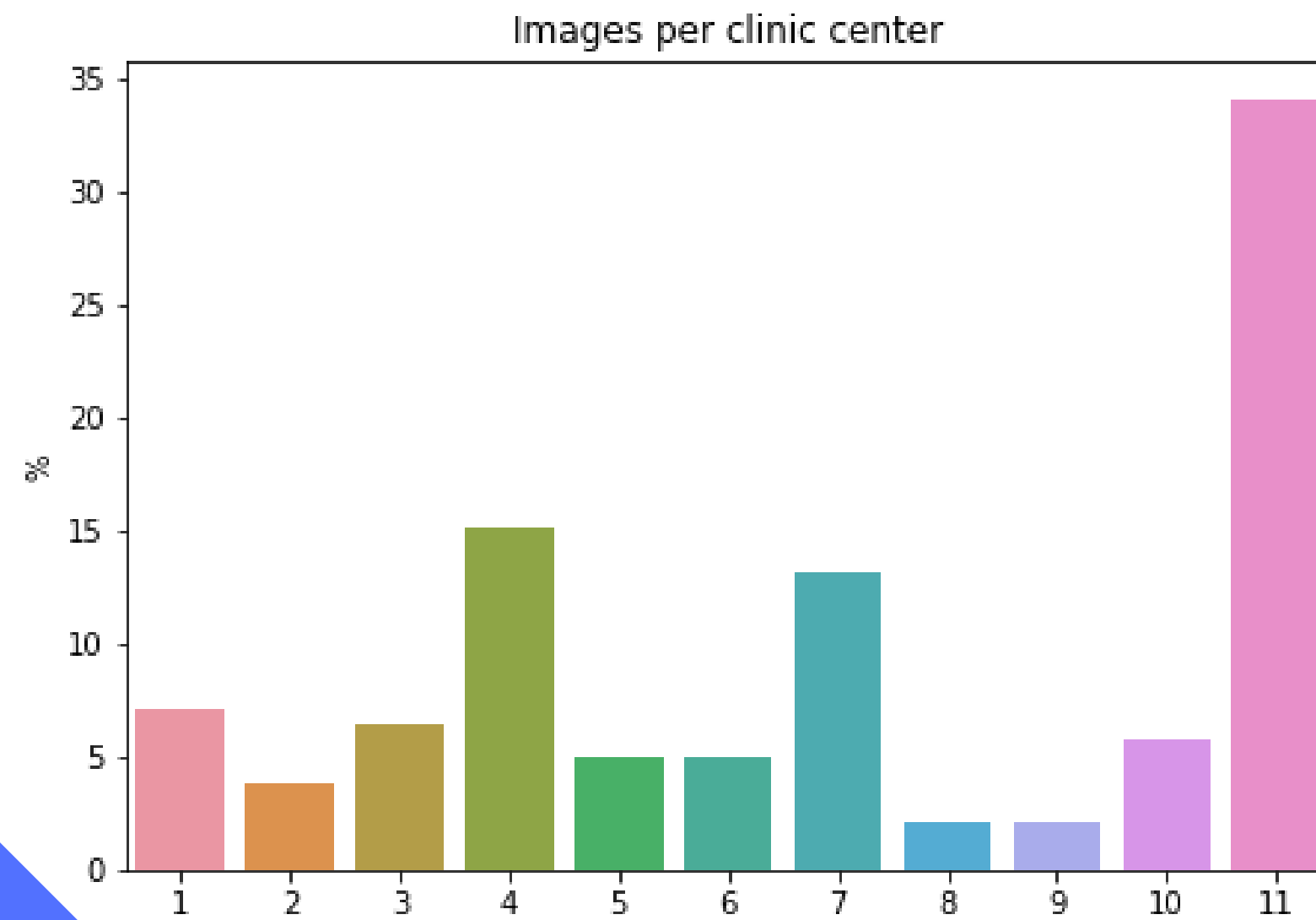
Ischemic Stroke
Blood clot stops the flow of blood to an area of the brain.

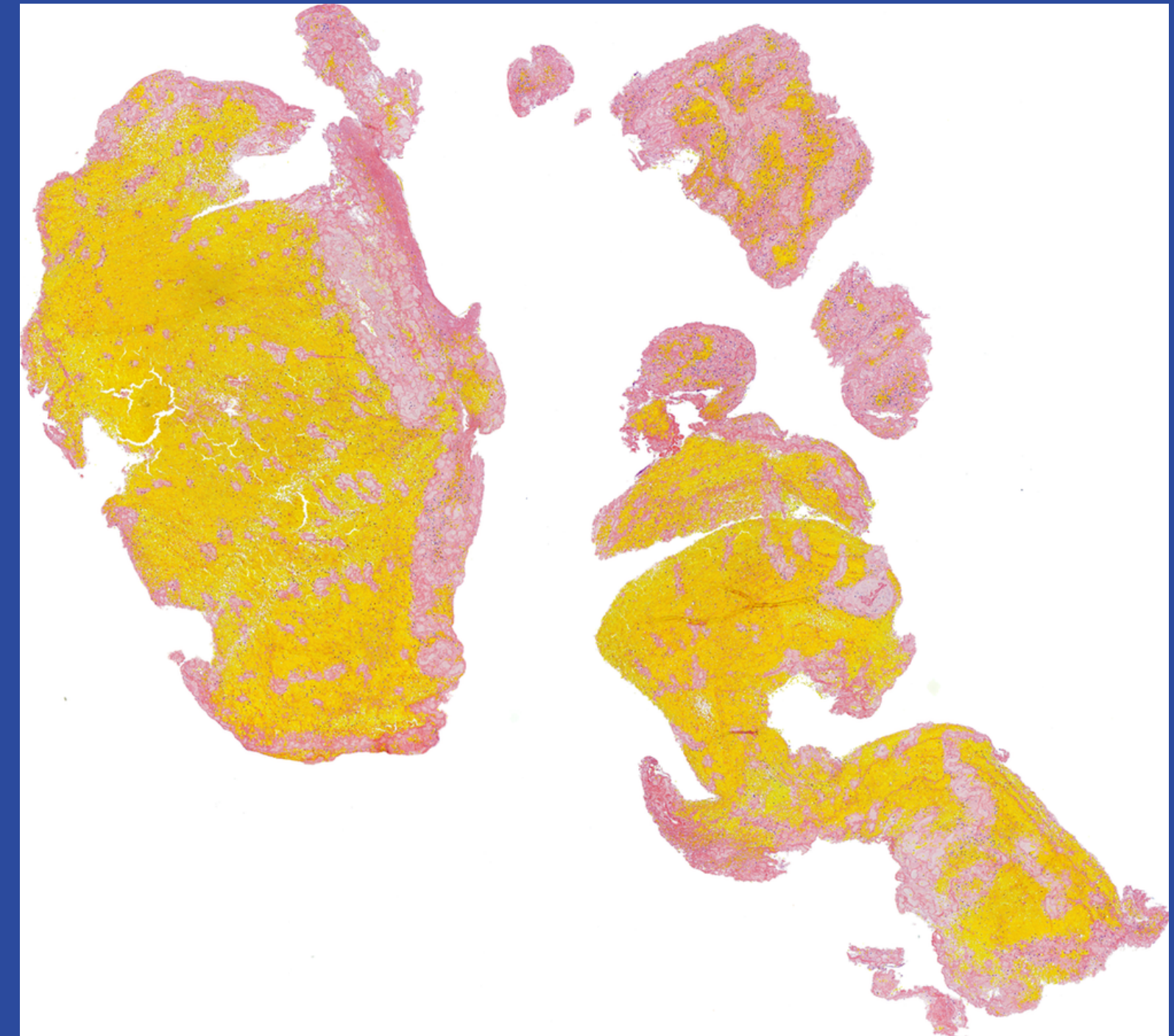© Heart and Stroke Foundation of Canada

H.Mayer

DATA

1,000 WHOLE SLIDE IMAGES - 400 GB
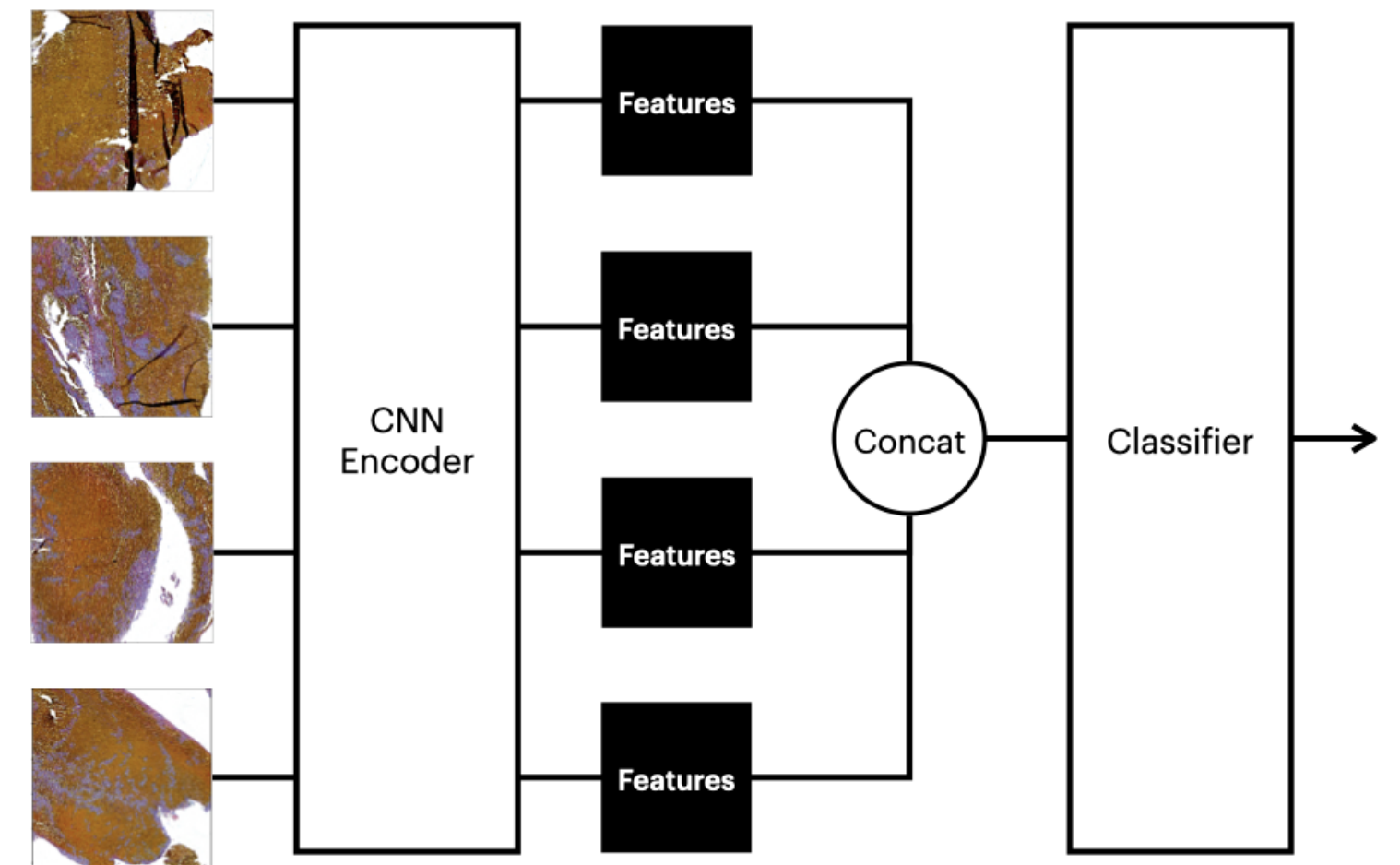

Images per clinic center

WHOLE SLIDE IMAGE OF CLOT

METHODS

- CLEAN DATASET
- HANDLE SIZE OF DATA
- MODEL THE DATA: NN & MIL
- EVALUATE & COMPARE

MIL MODELING

MODEL RESULTS

LOSS SCORES:
- **IMPROVEMENT** FROM BASELINE TO BEST

BASELINE	BEST
0.663	0.604

THE DIAGNOSTIC TOOL

1 **CREATES DIAGNOSTIC PREDICTION**
Automatically predicts the diagnosis from an image and assists physicians with patient diagnosis

2 **READS IN NEW WHOLE SLIDE IMAGES**
Automatically refines predictions based on new blood clot imaging uploaded by medical technicians

3 **OPTIMIZED FOR ADDITIONAL DATA**
The tool is able to read in patient biomarkers and mass spectrometry readings to improve diagnosis

Further Recommendations

1 EXPAND COMPUTATIONAL RESOURCES

2 MORE DATA: BIOMARKERS + MASS
SPECTROMETRY READINGS

3 EXPLORE OTHER SOLUTIONS:
PREVENTATIVE HEALTHCARE
PREDICT RISK + RECOMMEND SCREENING

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