DISEASE CLASSIFICATION ON CHEST X-RAYS

BY MERT OZBAY, ZACH ZAIMAN, NIKI VASAN

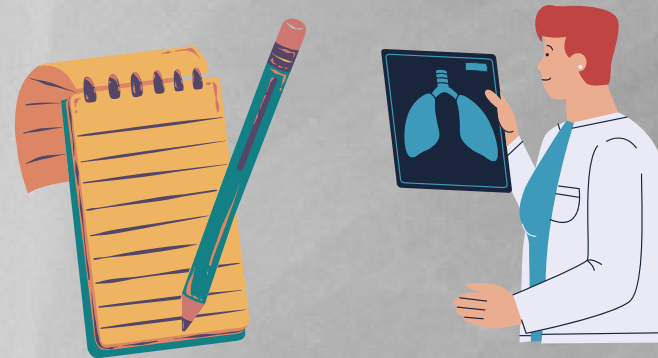**MOTIVATION:** EXPLORE REAL WORLD APPLICATIONS OF ML IN HEALTHCARE

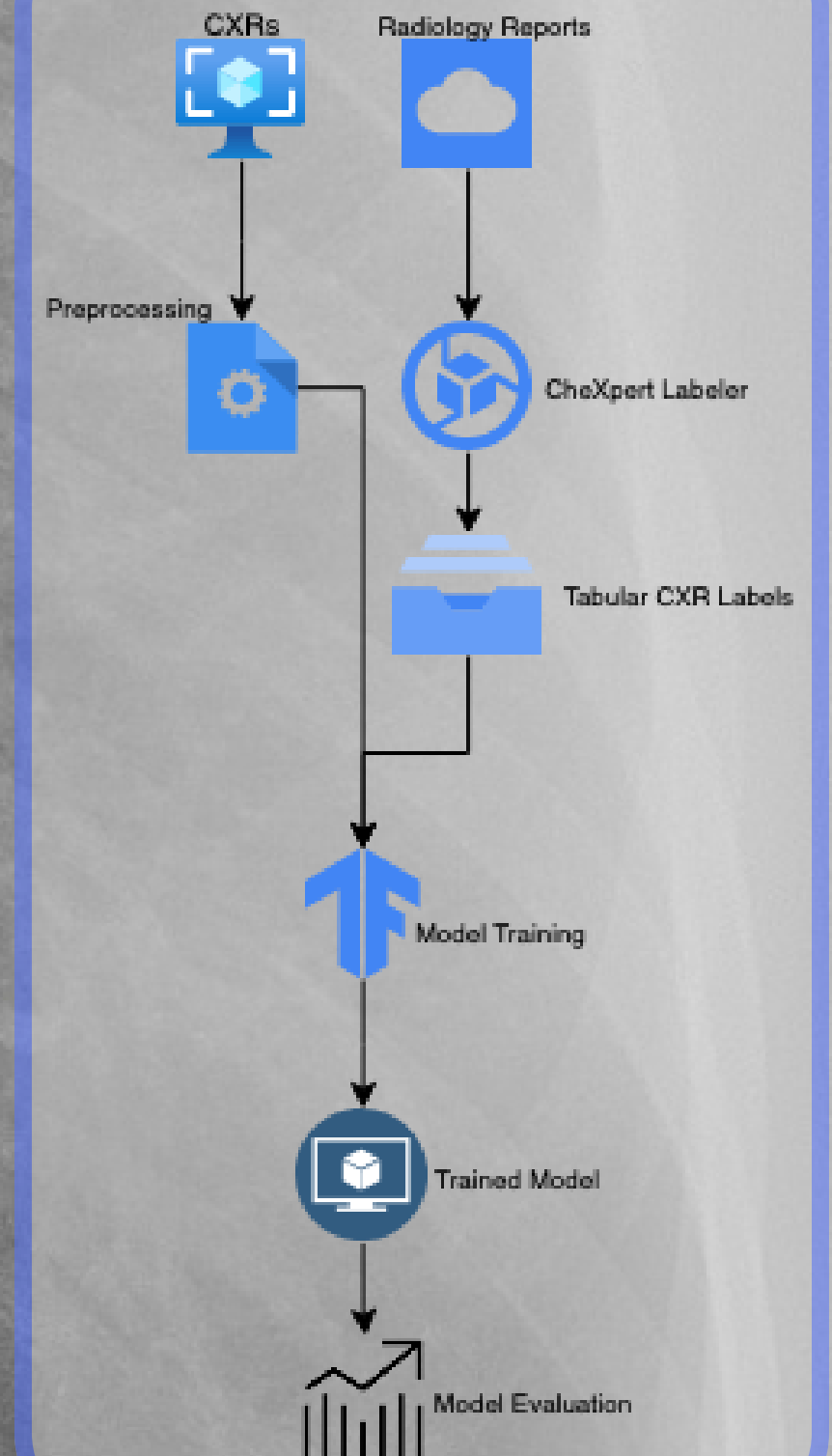## EXISTING RESEARCH

[1] J. Irvin et al., 'CheXpert: A Large Chest Radiograph Dataset with Uncertainty Labels and Expert Comparison', CoRR, abs/1901.07031, 2019.

[2] G. Huang, Z. Liu, and K. Q. Weinberger, 'Densely Connected Convolutional Networks', CoRR, abs/1608.06993, 2016.

[3] H. Sharma, J. S. Jain, P. Bansal, and S. Gupta, 'Feature Extraction and Classification of Chest X-Ray Images Using CNN to Detect Pneumonia', 2020 10th International Conference on Cloud Computing, Data Science & Engineering (Confluence), 2020, pp. 227–231.

DATA

MIMIC IV Database
- 370k X-ray Images
- Clinical Reports (Unstructured)
- Demographic, Hospital Records

Target: Disease Class

PREPROCESSING	EVALUATION
PIXEL INTESNITY NORMALIZATION	PRAUC, ROCAUC, F1-SCORE, PRECISION, RECALL, CONFUSION MATRIX
IMAGE AUGMENTATION (HORIZONTAL FLIPPING, RANDOM ROTATION, RANDOM SCALING)	STRATIFY RESULTS BY DEMOGRAPHIC FEATURES
RESIZING	STRATIFY RESULTS BY CLINICAL FEATURES

ARCHITECTURE DIAGRAM

DISEASE CLASSIFICATION ON CHEST X-RAYS
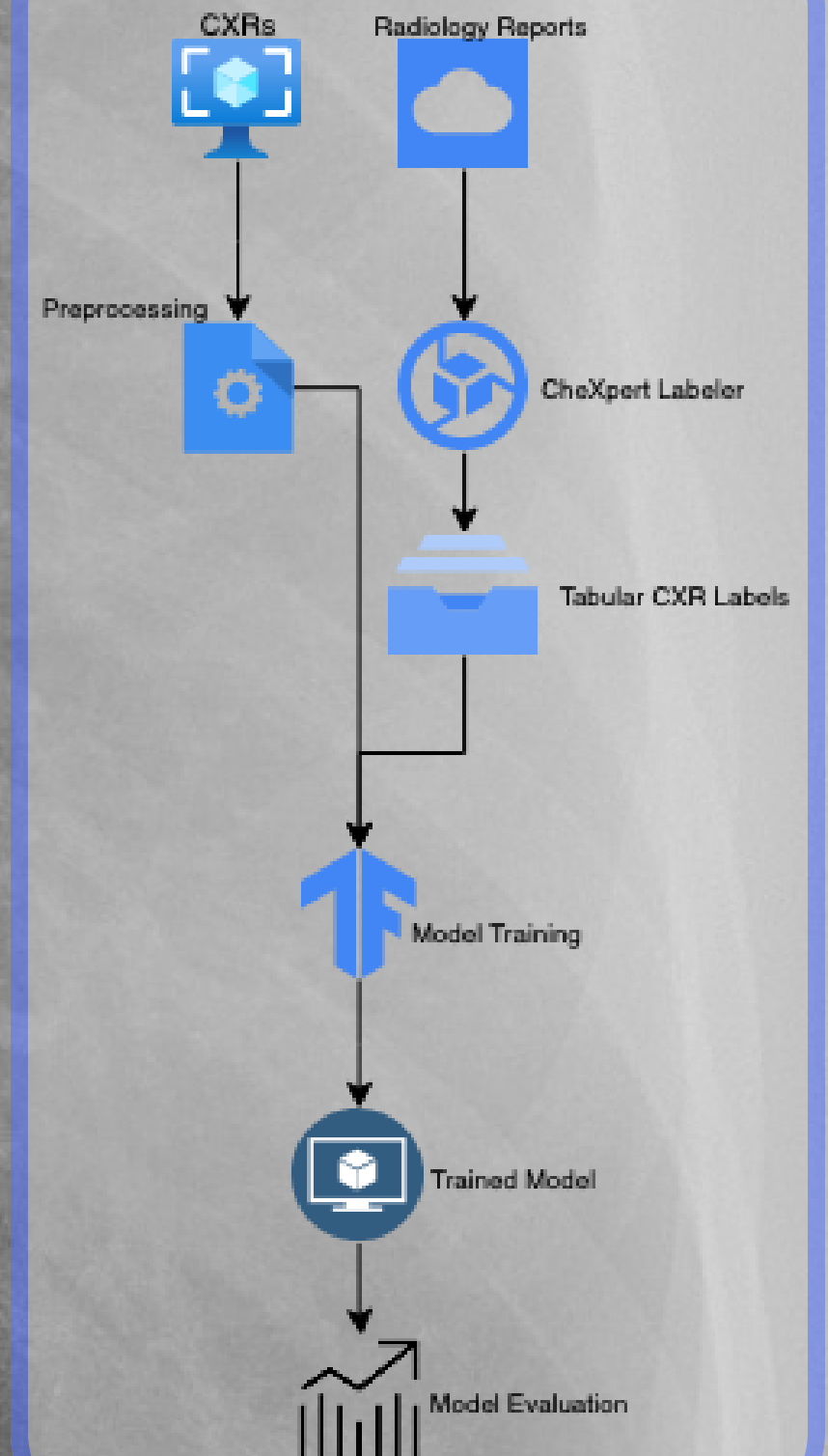
BY MERT OZBAY, ZACH ZAIMAN, NIKI VASAN

EXISTING RESEARCH

[1] J. Irvin et al., 'CheXpert: A Large Chest Radiograph Dataset with Uncertainty Labels and Expert Comparison', CoRR, abs/1901.07031, 2019.

[2] G. Huang, Z. Liu, and K. Q. Weinberger, 'Densely Connected Convolutional Networks', CoRR, abs/1608.06993, 2016.

[3] H. Sharma, J. S. Jain, P. Bansal, and S. Gupta, 'Feature Extraction and Classification of Chest X-Ray Images Using CNN to Detect Pneumonia', 2020 10th International Conference on Cloud Computing, Data Science & Engineering (Confluence), 2020, pp. 227–231.
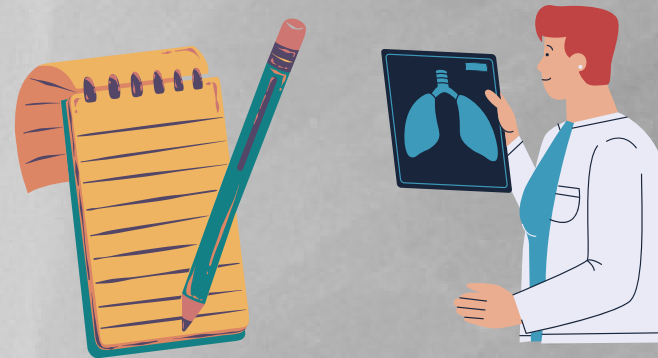
DATA

MIMIC IV Database
- 370k X-ray Images
- Clinical Reports (Unstructured)
- Demographic, Hospital Records

Target: Disease Class

MOTIVATION: EXPLORE REAL WORLD APPLICATIONS OF ML IN HEALTHCARE

PREPROCESSING	EVALUATION
PIXEL INTESNITY NORMALIZATION	PRAUC, ROCAUC, F1-SCORE, PRECISION, RECALL, CONFUSION MATRIX
IMAGE AUGMENTATION (HORIZONTAL FLIPPING, RANDOM ROTATION, RANDOM SCALING)	STRATIFY RESULTS BY DEMOGRAPHIC FEATURES
RESIZING	STRATIFY RESULTS BY CLINICAL FEATURES

ARCHITECTURE DIAGRAM