

# Detection of Cancer Through AI

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## Background

- Develop AI model to improve Non-Small Cell Lung cancer diagnosis
- Evaluate cancer detection models for clinical use with an explainable AI workflow
- Address accuracy/bias by surveying underserved populations for equitable healthcare access.

## Research Question

Can deep neural networks enhance Non-Small Cell Lung cancer screening?

## Results

Used a binary classifier trained on a subset of lung cancer images, with the most severe cases chosen

Used an 80-20 training/validation split

Validation accuracy

90%

## Data Collection

Collect healthy, benign, and malignant DICOM images from public datasets.

LIDC dataset

- Unhealthy CT images
  - 244,527 images
  - 1010 cases

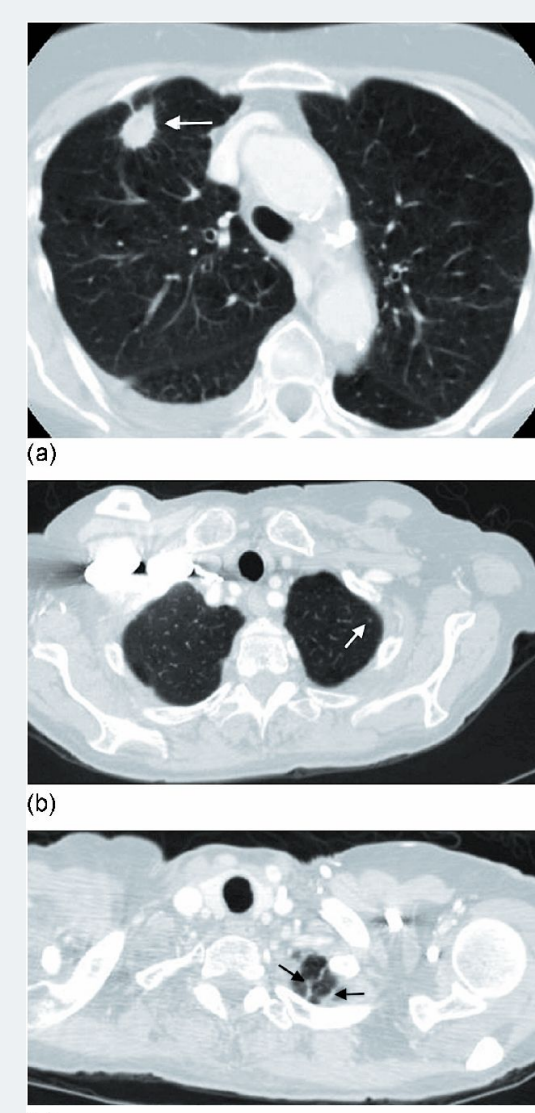


Figure 1: LIDC CT images

IQ-OTHNCCD dataset

- Healthy CT images
  - 1190 images
  - 110 cases

## Methodology

### Proposed Multi-Classification Deep CT Model

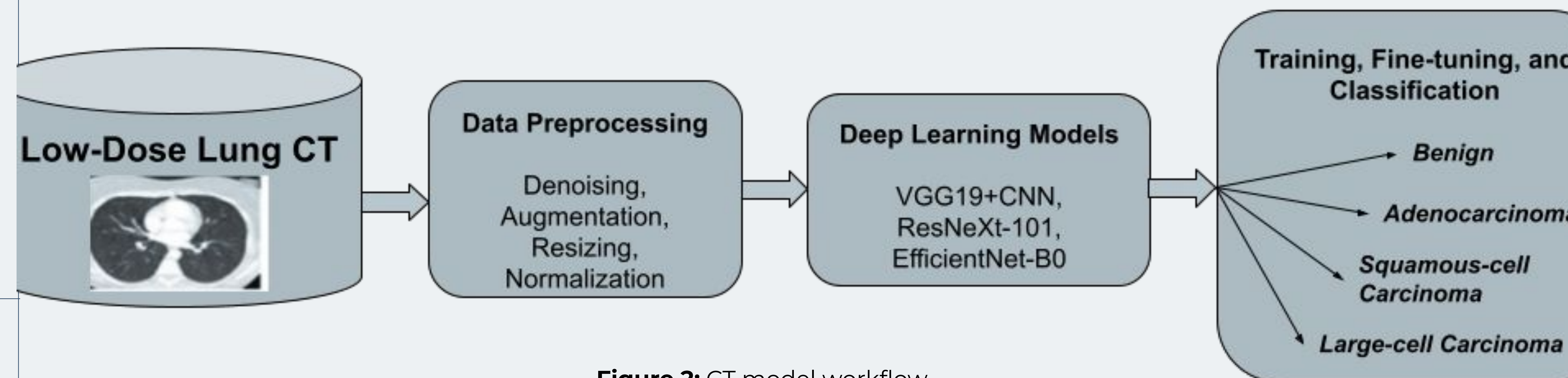


Figure 2: CT model workflow

Using publicly available datasets:

- Train CNNs to identify & classify lung cancer nodules
- Denoise & augment data with generative models.
- Research low-cost hardware deployment (e.g. Google TPUs) and combine with health policy outcomes survey.

### Public Perception Survey

Does cultural background have an impact on cancer technology attitudes among PG County residents aged 60+?

- 6-month survey: online & on-paper
- Analyze cancer tech impact on PG county residents 60+
- Adjust model enhancements accordingly

## Future Goals

- ◊ Integrate patient preferences and background into cancer detection model
- ◊ Optimize for accessibility and cost-effectiveness
- ◊ Conduct field study to measure model efficiency and application
- ◊ Conduct further research to improve model robustness.

Please scan for references and acknowledgements

