Organ-specific Cancer Diagnosis: A Deep Learning Approach

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- **Introduction:**
  - In our exploration of Artificial Intelligence-assisted methods to enhance diagnostic performance, we identified that no prior work has been done to classify cancer across different organs.
  - Recognizing the increasing rates of cancer patients, our goal is to develop a model capable of detecting and classifying cancer in multiple organs.
- **Dataset:** We gathered initial data samples from CMRP,NISER and received confirmation for additional data from AIIMS, BBSR Hospital.
- **Midway Goals:**We will explore some basic classification models(KNN,SVM,LR) and 3D-CNN and try to pre-process the dataset using MatRAD
- **Baselines:**
  - We explore the application of 3D Convolutional Neural Networks (CNNs) for segmentation(DenseVNet) and classification, testing various models to attain optimal accuracy.
- **Expected Results:** Anticipating that our model will significantly enhance diagnostic performance.

- **Teammates & Work Division:**
  - Kartika: Dataset collection and literature review.
  - Sannu: Data preprocessing and literature review.
  - Model implementation will be jointly managed.
- **Relevant Papers:**
  - Fakrul Islam Tushar, MS, Vincent M. D'Anniballe, MS, Rui Hou, PhD, Maciej A. Mazurowski, PhD, Wanyi Fu, PhD, Ehsan Samei, PhD, Geoffrey D. Rubin, MD, MBA, and Joseph Y. Lo, PhD.Classification of Multiple Diseases on Body CT Scans Using Weakly Supervised Deep Learning.Radiol Artif Intell. 2022 Jan; 4(1): e210026.
  - End-to-end lung cancer screening with three-dimensional deep learning on low-dose chest computed tomography .
  - Reduced Lung-Cancer Mortality with Volume CT Screening in a Randomized Trial