Cairo University

X-REPORTO

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1. Problem Statement

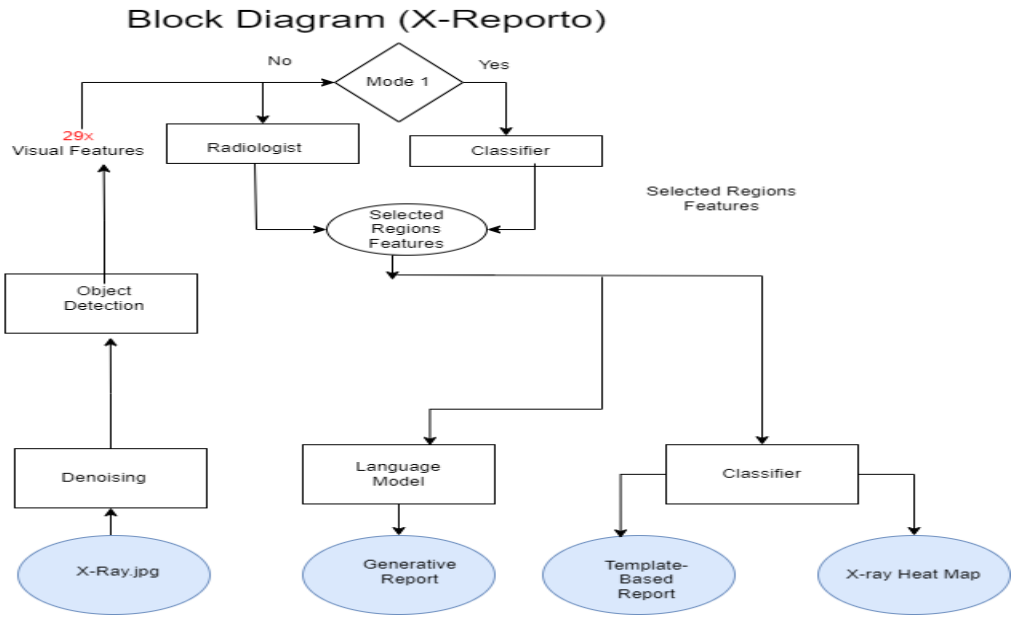
The project is an AI solution to automatically diagnose chest x-rays by denoising the image, detecting anatomical regions and diseases in each region followed by writing a full medical report.

2. Motivation

Shorten the time it takes for radiologists to diagnose patients and generate reports on a large number of chest X-rays.

Many X-rays are waiting in queue, and the more serious cases need to be examined first.

3. System Architecture



4. List of Deliverables

Module Name	Function	Input	Expected Output	% of used Libraries
Denoising	Remove all possible Device Noises from X-rays while keeping relevant medical information	X-Ray Image	Filtered X-ray image	5%
Region Detection	Detect 29 anatomical medical regions with corresponding visual features of each region	Filtered X-ray Image	29 visual features along with bounding boxes of each region	10%
Multi-Label Classifier	Detect abnormality in each region then detect diseases	29 visual features of each region	Selected abnormal visual features of regions to generate report on it with possible diseases in each region	10%
Report Generation	Create full reports using rule based & generative approaches	Selected abnormal visual features with labels	Full report	5%
UI	- Annotation tool - Prioritize cases	Model results	- Corrected results - Critical cases	12%
Integration	Provide tool that combines deployed AI models with interface	X-ray image	Full functionality offered above	8%