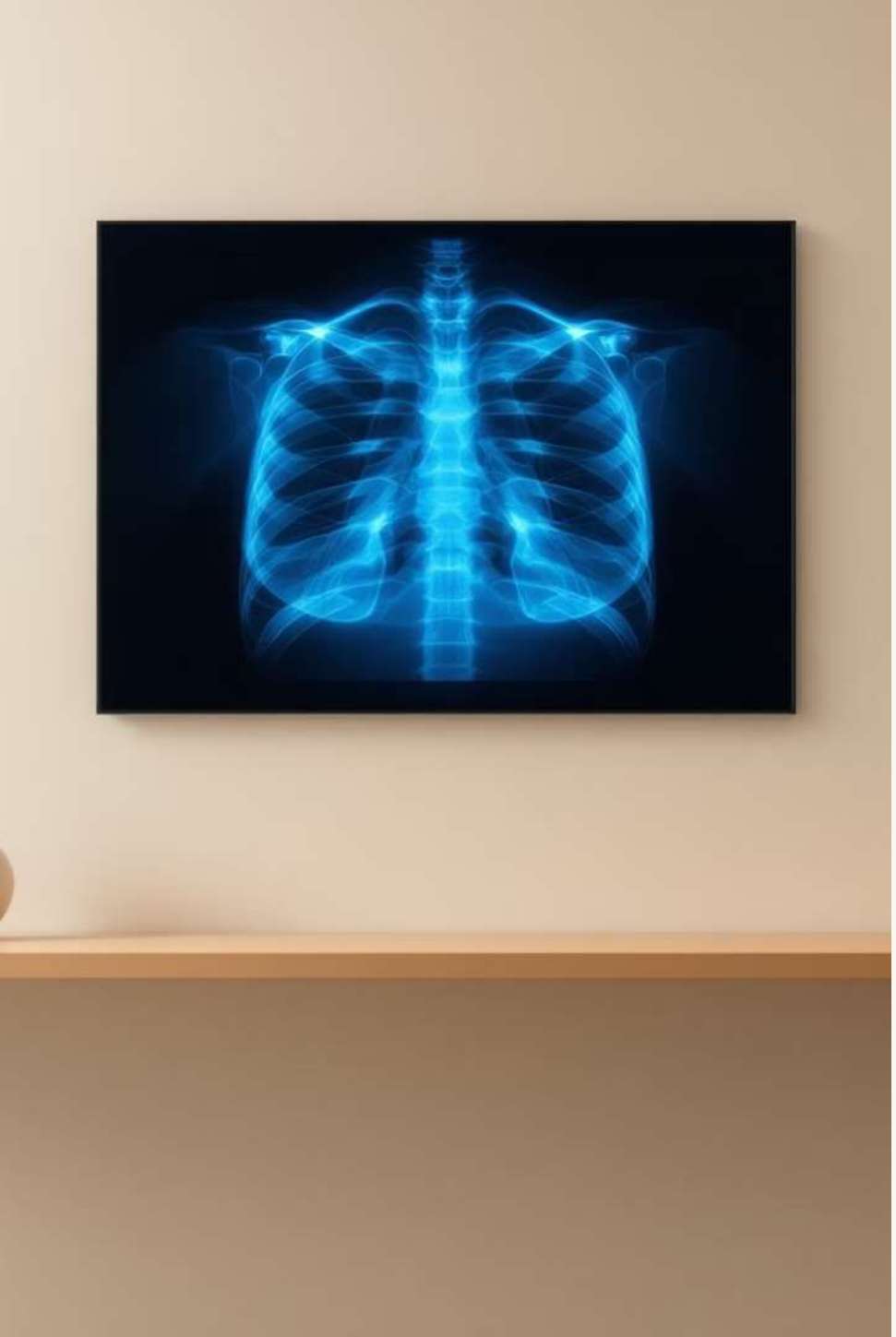
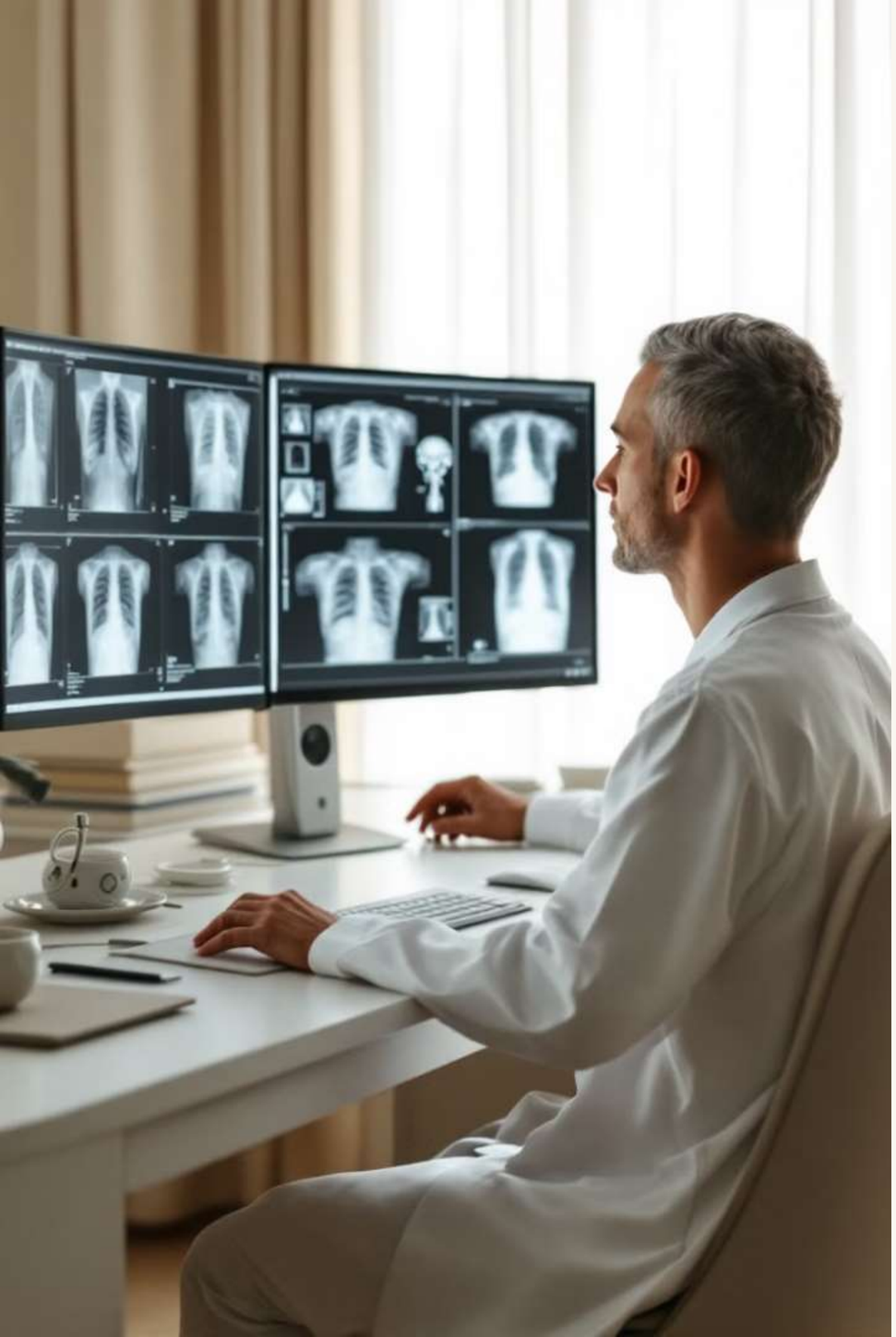


AutoImpress: Medical Report Summarization with LLMs

Automating impression generation from radiology reports using fine-tuned medical language models

Team members:
Yaniv Grosberg
Netanel Ohev Shalom
Aviel Shmuel

GitHub Repository: https://github.com/Yanivgg/AutoImpress



Project Overview

Problem

Radiologists write structured descriptions + final "Impression"

Challenge

Requires medical reasoning and domain expertise

Solution

Automate with fine-tuned medical LLMs

Benefits

Reduce workload, support junior clinicians

Data & Task Overview

NLP Task

Text-to-text generation

Abstractive summarization

Input

- Findings
- Indication
- Comparison
- MeSH terms

Dataset

IU-XRay Dataset

3,851 chest X-ray reports

Open-access

Goal

Automatically generate the impression section of a radiology report based on the findings, indication, comparison, and other structured fields.

Real Examples

Example #1

Input: "Lungs clear. No effusion."

Indication: "Chest pain"

Output: "No acute cardiopulmonary abnormality."

Example #2

Input: "Right lower lobe opacity with air bronchogram."

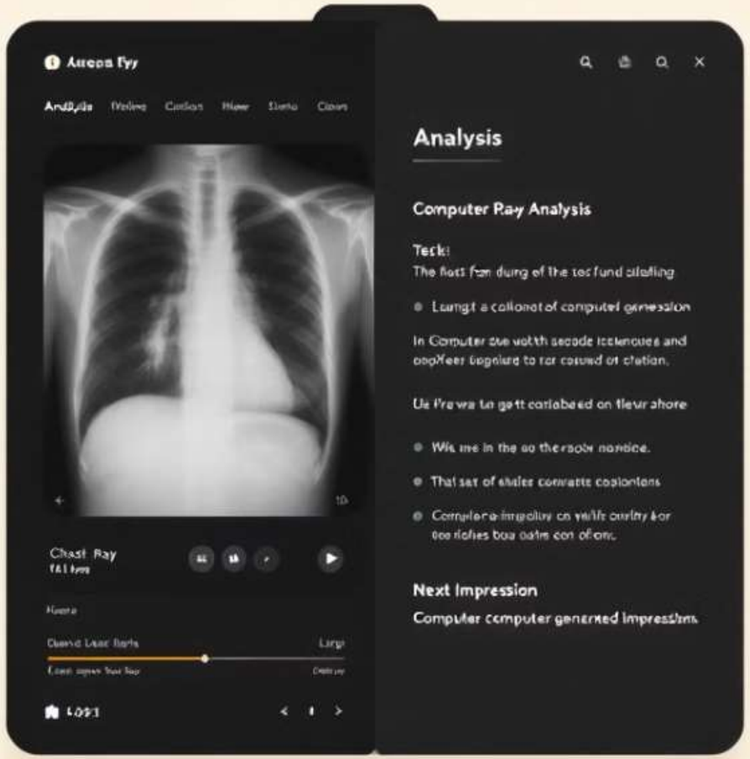
Output: "Findings consistent with right lower lobe pneumonia."

Key Patterns

Condenses detailed findings

Adds clinical interpretation

Uses domain-specific phrasing



Evaluation Plan

- LLM-based Clinical Evaluation
  A language model will assess whether the generated impression is clinically equivalent to the original.

- BERTScore
  Measures semantic similarity between the generated and reference impressions using contextual embeddings.

Baseline Models

- Pretrained Language Model with Few-shot Prompting
  A general-purpose LLM (e.g., T5) used without fine-tuning, guided by a small number of in-context examples.

- Simple Template-based Generation
  Impression generated using predefined rules or patterns based on common radiology phrasing.

- Fine-tuned Language Model (Ours)
  A domain-adapted LLM trained to generate impressions from structured inputs.