# Addressing Radiologist Burnout with Vision-Language LLMs for CT Scan Evaluation

### The Problem

The amount of CT exams conducted globally has been increasing steadily, leading to significant burnout among radiologists. This increase in workload impacts the well-being of radiologists and also risks compromising the quality and timeliness of patient care. The potential of Large Language Models (LLMs) which are vision based to alleviate this burden is substantial.

### Our Solution

The proposed novel evaluation framework to assess the capabilities of vision-language LLMs in generating accurate summaries of abnormalities detected in CT scans. The approach involves the following steps:

1. Input and Generation: CT slices with identified abnormalities are fed into vision-based LLMs in our case GPT-4V.
2. Summary Creation: The models generate free-text summaries describing the characteristics of the abnormalities (e.g., lesion type, location, attributes).
3. Decomposition and Evaluation: A GPT-4 model then decomposes these summaries into specific aspects (body part, location, type, and attributes)

### Motivating Business/Enterprise Use-Case

Why This Problem Matters:

- Radiologist Burnout: The increasing workload is leading to higher rates of burnout among radiologists, resulting in reduced job satisfaction and potential increases in errors.
- Patient Care: Timely and accurate interpretation of CT scans is crucial for patient outcomes. Delays or inaccuracies can have serious health consequences.
- Healthcare Costs: Burnout and inefficiencies in radiology departments contribute to increased healthcare costs due to longer hospital stays and repeated imaging studies.

Value Proposition:

- Efficiency: Automating the generation and preliminary evaluation of CT scan reports can significantly reduce radiologists' workload, allowing them to focus on more complex cases.
- Accuracy: Enhanced accuracy in initial reporting through validated LLM-generated summaries ensures better patient management and outcomes.
- Cost Savings: By streamlining radiology workflows and reducing burnout, healthcare institutions can save on costs associated with staff turnover, overtime, and repeated procedures.