

# INCREASING MOBILE X-RAY EFFICACY THROUGH TECHNOLOGY-ASSISTED ALIGNMENT

## Mobile X-Ray System



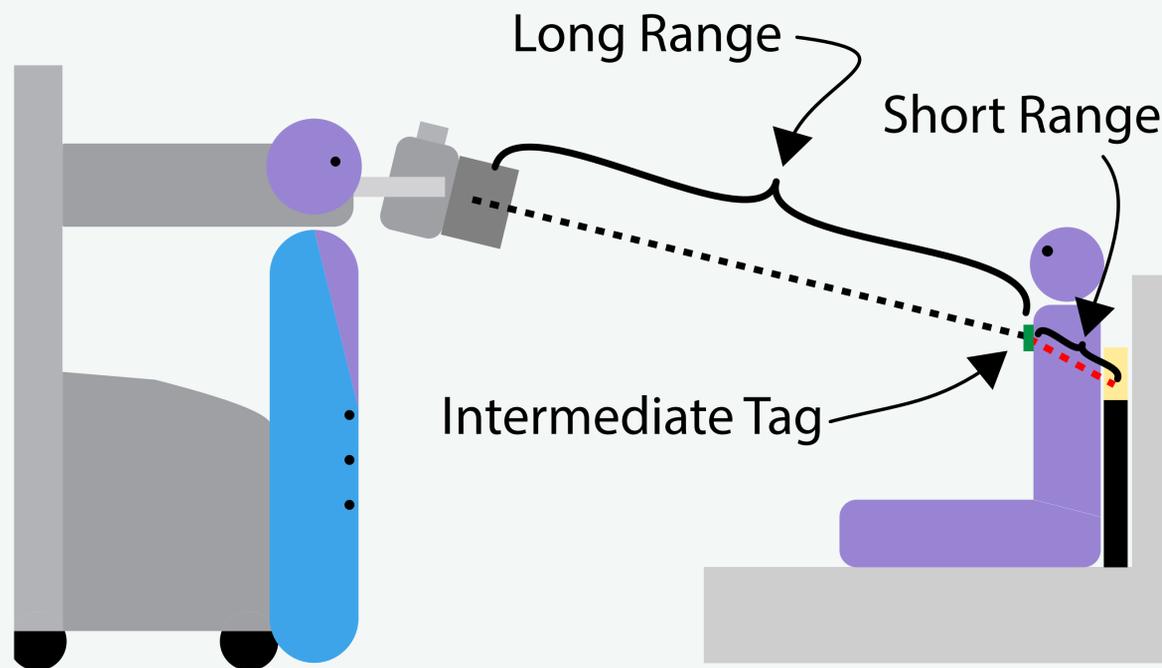
In situations where a patient is immobile, or otherwise unable to leave their hospital room, a mobile x-ray unit must be brought in. This unit consists of an x-ray source and an x-ray detector. It is used in time crucial circumstances where getting a quick x-ray can be important.

## Workflow



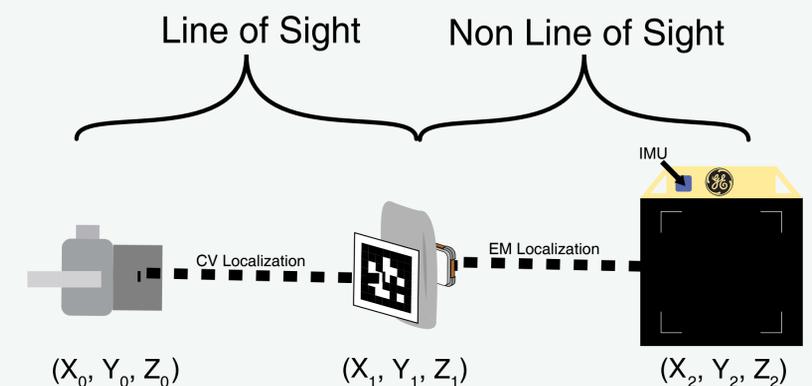
The technologists position the detector behind the patient. If the detector is hidden behind the patient, it can cause problems lining up the emitter. The technologist must rely on their own judgment to position the emitter. Any misalignment can cause the technologist to have to retake the x-ray.

## Full Solution



The Long Range localization method, computer vision, is used to localize to the intermediary. To get from the intermediary to the patient, we use electromagnetic localization. Knowing the full transform between detector and x-ray source, we can determine if the system is still aligned.

We broke this problem down into two regions: The Line of Sight Region and the Non Line of Sight region. We developed a system using different technologies for each region, with an intermediate tag connecting the two together.



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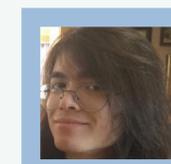
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