

Motivation

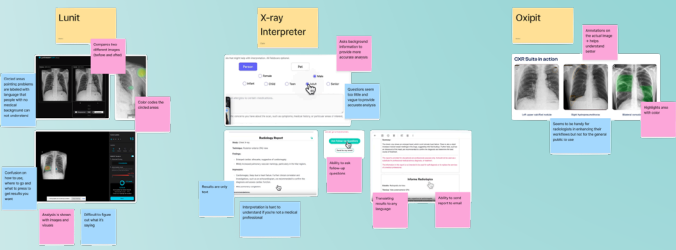
I first encountered this issue after twisting my ankle during a college figure skating practice just one week before a competition. I was in pain, overwhelmed, and desperate to know what was wrong. My coach and teammates needed updates, and I needed answers to decide whether I could continue training. I went to the hospital for an X-ray expecting clarity, but even after the scan, I was told I would have to wait at least another week for the results.

My experience is not unique. Medical imaging is often expensive, slow, and difficult to access, leaving many patients waiting days or even weeks after an X-ray to receive answers. These delays can cause prolonged pain, stress, and postponed treatment, especially when the injury feels urgent. For low-income patients, uninsured individuals, and students or athletes whose injuries are not considered emergencies, these barriers can be even greater.

X-Ray+ aims to reduce this gap by making X-ray explanations more immediate, accessible, and easier to understand.

Current services & critique

There are already websites using AI online that read X-rays, but I noticed aspects I could learn from as well as areas that were lacking. I conducted a critique of three different platforms I found.



Research

- X-rays use radiation to create b&w images that are then interpreted by a trained radiologist.
 - X-rays are most commonly used for bones and joint injuries
 - Different types of X-ray imaging (CT, fluoroscopy, mammograms, DXA) show that imaging technology is widespread and foundational in diagnosis.
 - Patients do not and can not interpret X-rays themselves. Results depend on professional review and reporting.
 - Reading X-rays requires a systematic, trained approach.
 - Interpretation involves checking multiple structured criteria
 - (airway, breathing, circulation, etc.).
 - Even subtle abnormalities require experience to detect.
- AI-generated radiology reports are "good but not great."
 - Automated evaluation tools often fail to detect clinically meaningful errors.
 - Human radiologists outperform automated scoring systems in identifying mistakes.
 - New evaluation metrics (RadGraph F1, RadCliQ) aim to better align AI output with human clinical judgment.
 - Accuracy and reliability are critical in medical contexts.
 - AI can accurately distinguish between normal and abnormal chest X-rays.
 - AI can help reduce radiologist workload.
 - AI is most effective when used to support workflow efficiency rather than replace professionals.

Cleveland Clinic (nonprofit academic medical center), Harvard Medical School (academic research institution), Radiological Society of North America – RSNA (professional radiology organization), International Emergency Medicine Education Project (medical education initiative)

Storyboarding



She falls down the stairs and injures her ankle.



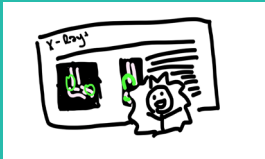
She gets an X-ray at the hospital.



She receives the results but doesn't understand them and feels anxious.

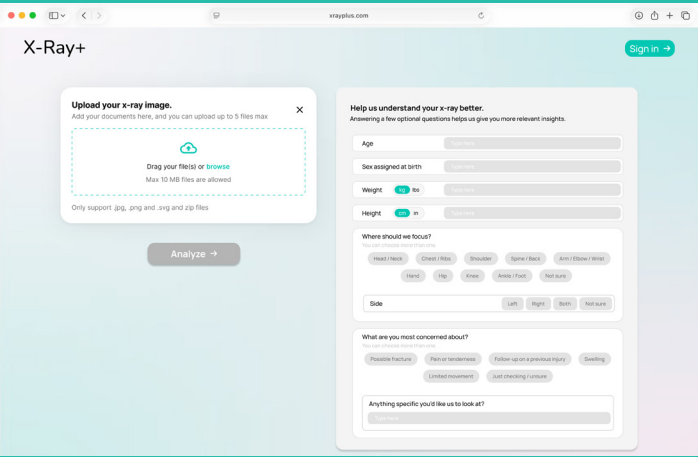


She uploads the X-ray to X-Ray+.

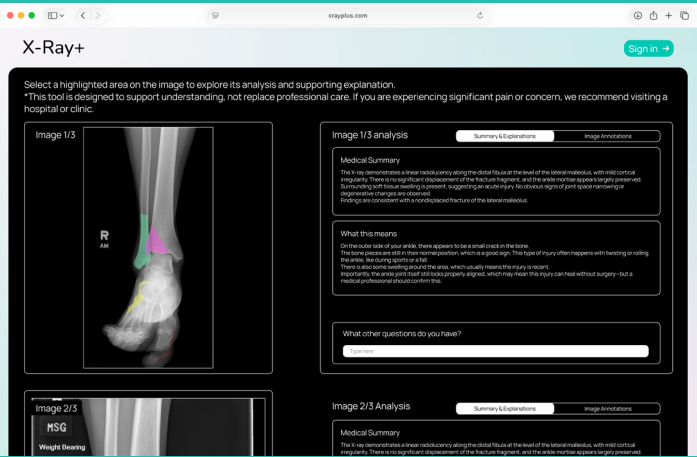


X-Ray+ explains the image clearly, helping her feel relieved.

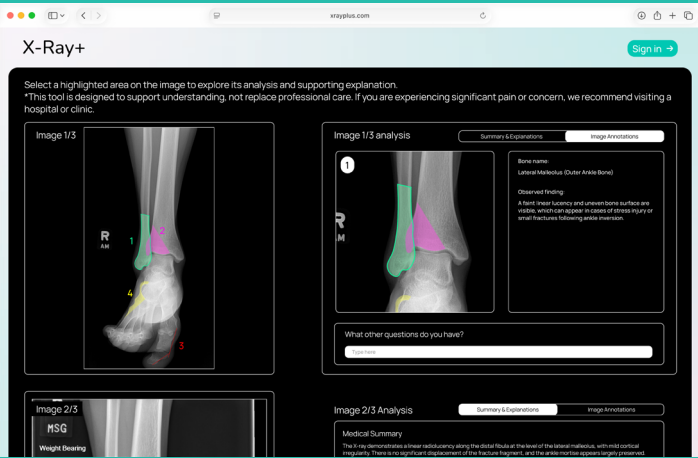
Prototype



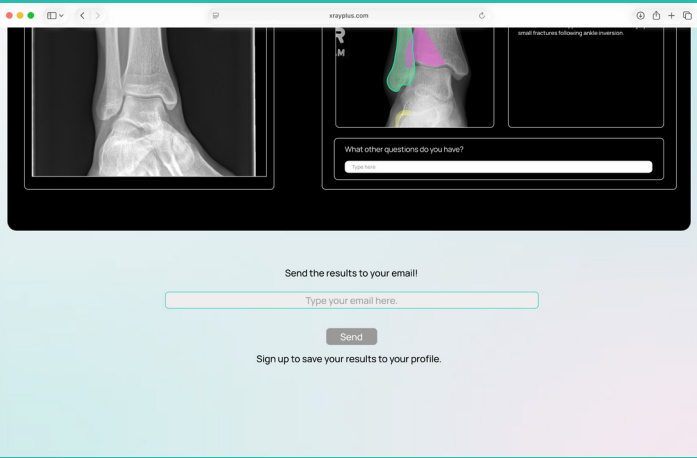
- Ask users for background information before analyzing the x ray



- Understandable for everyone, not only those with medical knowledge
- Users should know that the interpretation is not a diagnosis or medical advice from a professional. It is simply a helping resource.
- Ability to ask follow up questions after getting results



- Show annotations and color code places to point out on images



- Results can be downloaded or sent to your email