Problem Statement and Goals
Chest Scan

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Table 1: Revision History

Date	Developer(s)	Change
21 Sept 2024	Harrison Chiu	Started basic info of doc

1 Problem Statement

This section describes the problem that this project aims to solve. It goes over the general problem, expected inputs and outputs of the project, the environment, and the stakeholders.

1.1 Problem

Chest X-rays are one of the most common diagnostic tools for detecting lung and heart conditions. However, interpreting them accurately requires expertise. Radiologists must examine each x-ray carefully. Sometimes they can miss subtle indicators of a disease. Since chest x-rays are taken for many different reasons, such discovering lung and cardiac conditions or ruling out diseases, there is an increasing volume of medical imaging data. This rising number of x-rays leads to significant delays in diagnosis, overwhelming radiologists which could cause them to make mistakes. As a result, the demand for more efficient and reliable diagnostic support grows. A neural network designed to process chest x-rays can help radiologists detect conditions, reduce diagnostic errors, and provide faster assessments.

1.2 Inputs and Outputs

[Characterize the problem in terms of "high level" inputs and outputs. Use abstraction so that you can avoid details. —SS]

1.3 Stakeholders

1.4 Environment

[Hardware and software environment —SS]

2 Goals

3 Stretch Goals

4 Challenge Level and Extras

[State your expected challenge level (advanced, general or basic). The challenge can come through the required domain knowledge, the implementation or something else. Usually the greater the novelty of a project the greater its challenge level. You should include your rationale for the selected level. Approval of the level will be part of the discussion with the instructor for approving the project. The challenge level, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

[Teams may wish to include extras as either potential bonus grades, or to make up for a less advanced challenge level. Potential extras include usability testing, code walkthroughs, user documentation, formal proof, GenderMag personas, Design Thinking, etc. Normally the maximum number of extras will be two. Approval of the extras will be part of the discussion with the instructor for approving the project. The extras, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

Appendix — Reflection

[Not required for CAS 741 —SS]

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?
2. What pain points did you experience during this deliverable, and how did you resolve them?
3. How did you and your team adjust the scope of your goals to ensure they are suitable for a Capstone project (not overly ambitious but also of appropriate complexity for a senior design project)?