Problem Statement and Goals
ProgName

Team #, Team Name
Student 1 name
Student 2 name
Student 3 name
Student 4 name

Table 1: Revision History

Date	Developer(s)	Change
09/23/2025	Angela Zeng	Add first draft of problem statement and goals
Date2	Name(s)	Description of changes
...	...	...

1 Problem Statement

Instructors lack access to real-time insights about where students direct their attention during learning activities, particularly in large-group settings. Without this data, it is difficult to assess engagement, monitor collaboration, and adapt teaching strategies to improve the effectiveness of learning.

There is a need for a system that can capture and analyze group gaze data during classroom activities, so that instructors can better understand and respond to student attention and engagement in both synchronous and asynchronous learning contexts.

1.1 Problem

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

1. Develop a Learning Platform
    - Integrate large-group eye tracking into both synchronous (live classes) and asynchronous (recorded or online activities) learning contexts.
2. Enable Contextual Data Capture
    - Log gaze data alongside classroom learning activities such as passive content viewing (e.g., watching videos) and active group work (e.g., exercises, discussions).
3. Conduct In-Person Research
    - Run a study with instructors and students at McMaster University to evaluate how gaze-based insights affect teaching and learning.
4. Inform Future System Designs
    - Use study findings to guide the development of features like instructor dashboards and real-time gaze analytics.
5. Tackle Key Technical Challenges
    - Address issues in system design, reliable capture of group gaze data, and effective real-time visualization of attention patterns.

3 Stretch Goals

4 Extras

[For CAS 741: State whether the project is a research project. This designation, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

[For SE Capstone: List your extras. Potential extras include usability testing, code walkthroughs, user documentation, formal proof, GenderMag personas, Design Thinking, etc. (The full list is on the course outline and in Lecture 02.) Normally the 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)?