1.1 Problem Statement

Our project looks to increase participation in large class settings. In large classrooms it can be hard for students to ask questions if they are sitting far away or stay engaged with so many other students in a lecture hall. Along with this, being called out in a large lecture hall can be intimidating, so anonymity can help increase overall participation and useful discussions. Also, right now it is difficult for the professors to gage how involved all of the students are in lectures as well as get valuable feedback on what topics people are struggling with. This app will allow professors to see statistics for class participation, gauge how well TA's and students are performing, and ask students questions to increase class participation. Our app will also allow students to feel like they are having one to one communication with the professor whether they want their name to be shown or not.

1.2 Requirements & Constraints

- Ability to run on different browsers and OS. **(functional requirement)**
- Handle up to 2000 concurrent users. (Estimated using the top five largest lecture halls at Iowa State) **(functional requirement)**
- Maintain security with multiple levels of access. **(realistic constraint)**
- Code should be well documented and documented on a (minimum) weekly basis. **(qualitative)**
- Project must be completed within 1,500 person hours. **(resource constraint)**
- Project should be testable by anyone working on it. **(realistic constraint)**
- Web pages should be consistent across the site. Buttons, navigation aids, and other data should have the same feel and location as previous pages. **(UI requirement)**
- All code shall be either archived, deleted, or pushed to the dev branch each week. Once working, code will be pushed to master. **(resource constraint)**
- Front end shall be intuitive and easy to navigate for every user. **(qualitative aesthetic requirement)**

1.3 Engineering Standards

- IEEE 1008-1987 (Standard for Software Unit Testing): This standard will help us in our testing phase of the project. This ensures that we are testing our app efficiently by covering as many cases as we can in order to prevent faults in our code.
    - https://ieeexplore.ieee.org/document/27763
- IEEE 23026-2006 (Standard for Software Engineering -- Website Engineering, Website Management, and Website Life Cycle): This falls perfectly into our project plan, as it has good and detailed constraints for the development, use, maintenance, and life cycle of our website.
- HTTPS standards: The app will be originally built using html.
- Java coding standards will be used for the backend through SpringBoot.
- React coding standards: This is an option if Facebook's React Native fits the project well.
- GIT standards: Git will be our main hub for connecting code and managing tasks that need completed.

1.4 Intended Users and Uses

- **Students**
    - Sign up
    - Ask questions in lecture with text, image, audio, and/or video to be answered by TAs and Professors either anonymously or by name.
    - Reply to conversations/discussion
    - Participate in polls
    - View archived discussions and polls
- **TAs**
    - Sign up
    - Reply to conversations/discussion
    - View/Grade Responses to poll questions
    - View archived discussions and polls
    - See student contribution data
- **Professors**
    - Sign up
    - Open discussion
    - Open polls
    - Reply to conversations
    - See student and TA contribution data
    - View archived discussions and polls