In this project, we implement a small demo that simulate a smart classroom situation. In this demo, the data of the environment is collected from both hardware sensors and online sources. After the data is collected, it was sent to an online AI planner with a given room status and problem definition. Finally, when the plan is calculated from the planner, the corresponding actions will be taken, or the manager will be informed.

The core function of a smart classroom is basically realized in out demo, however, there are some features that we wanted to include at the beginning of the project but are end up with not implemented. For example, one feature that is not implemented is to detect whether a beamer is on and if there is reflection on projector curtain and if so, the lights should be closed, and the curtain should be put down. We tried to implement this feature, but we found out that it is hard to detect whether a beamer is on with the hardware we have, and it is also not meaningful to assume that this information can be got from a calendar. Furthermore, the reflection on projector curtain is also hard to detect, as the reflection is also related to a viewer’s watching angle and cannot be detected by a single light sensor. In the AI Planning domain, we have presentation modelled, thus, when we have the corresponding hardware, we can then easily add this feature.

During the implementation, we also noticed that some places can be done better. For example, in our implementation we have a model that remembers the status of a classroom, however, a change of a status is triggered by the plan. This means, if a plan told us to open the window, we will then execute the window actuator to make it open and set the window status of the classroom to open. A problem might occur is that, when the actuator is broken or offline, the status will still be changed even though the action has not been taken. The reason for that is because we do not have corresponding hardware that can give us information of the status of a classroom (such as if a door or window is locked, if lights is on, etc.), so we have to keep the changes of status based on actions.

The biggest problem we have faced during the implementation is the lack of hardware and time limitation. Based on the resources we have, we successfully implemented a small demo that can collect data from sensors and online sources. It will then take corresponding actions from a AI Planning plan to achieve a given goal. To conclude, we are satisfied with the result we have achieved in the end and we think doing this project is a good opportunity to explore internet of things