MP4: Project Proposal

The Big Idea

Leon, Viktor and I really liked working on our MP4, where we made an augmented reality Pong-game. In our Final Project, we want to expand this even more to a whole AR arcade platform, and make our code more efficient with a nicer GUI and make a range of games and applications for this platform.
For the MVP, we want to make it possible to select the color for the object used as a controller, have a nicer GUI, different menus with more game settings, at least 2 other games/applications and a (basic) high-score tracker (including AR keyboard). We would also need to get a license. Stretch goals include: Making it playable on Windows, do some real object recognition instead of only color recognition, using databases for the high score, using voice recognition as an alternative for the AR keyboard.

Ideas for games and applications:

- Space Invaders
- Fruit Ninja
- Some physics game, interacting with a ball through a maze
- Some music stuff?

Learning Goals

Richard Ballaux:

- How to create a very good system architecture, that is easy to refactor and expand
- Create an appealing GUI
- How license for open source code works

Viktor Deturck:

- Researching on how to make code more efficient
- Learning how to design a GUI efficiently and user-friendly

- Learning more about system architecture

Leon Santen:

- Working with databases
- Code architecture
- Make doc-strings accessible

Implementation Plan

Since we already have working code from MP4, the first thing that we will do is refactor that code into more general-usable code. Then we can start on designing the code architecture. This will be key to keep our code expandable. Next we start developing the new games and the bigger menu (keyboard, color detection, …) While doing all this we will try to keep the README and the website as up to date as possible. Next the highscore database will be implemented.

Project Schedule

Week 1 (10/29)	- Designing a system architecture (Due to Nov 5) - refactoring the old code - looking for methods to make the code more efficient - database research - figure out License
Week 2 (11/5)	- Starting on the games in two different teams - Making GUI look nicer - Game 1 implementation (done after week 3) - Starting the website (Due to Nov 29)
Week 3 (11/12)	- Making the menu, sewing the code together - High score implementation - Game 2 implementation (done after week 4)
Week 4 (11/19)	- MVP done - two more games
Week 5 (11/26)	- Looking into object recognition - Looking into implementation in Windows - Looking into (online?) database for the high score

Week 6 (12/3)	- Finetuning, extra buffer week for finishing up
Week 7 (12/10)	Demo Session (Due to 12/11): - Making poster - Making Website Code submission (Due to 12/11) Making presentation

Collaboration Plan

We will try to structure the code more carefully, make more comments and docstrings and write useful commits. That will allow us to collaborate more efficiently. We will have 2 or more meetings a week (depending how much is needed) to update each other on our progress or work together. We will be able to work more independently since the basic structure of the code already exists. Still we think it's a good idea to work at the same time if possible to solve problems more quickly and get different views as we evolve through our own code.

Risks

- The architecture of our code seems to be one of the major risks. Since we have already created a big part of the code, the code will become more complex over time. We will need to make sure that the basic components of our code are working and have good documentation
- Getting to the limitations of the Pygame-library
- Again, working with 3 people on the same project and in the end trying to merge modules together has proven to be pretty hard.

Additional Course Content

It would be nice to know more about databases and how to sufficiently store information. What databases exist? How do you use them?

How do you create good code architecture? We know that we can choose how to design our code, but it would be nice to have some advice on how to do it.