# Reflection report

In this document, I will be reporting on my graduation work, but as I recently changed my research topic, I had to restart my entire planning. This, of course, threw quite the wrench in my plans as I now have very little to reflect on.

The change of topic has been discussed with my supervisor, Alexander. I will be focussing on “How to optimize ambient occlusion generation at runtime using Vulkan” from now on.

## Time management

For time management and project planning I have chosen to use HackNPlan. I learned to work with it during Game Project and Group Project, it is a well-known management tool with many easy to use and useful features that make planning for any kind of project more efficient. I have also started to use it for other portfolio projects in my free time, so I have extend knowledge on how to organize and arrange my tasks properly.

HackNPlan is very useful for keeping track of what tasks have been done, which tasks are in progress and what tasks still have to be started. The categories are also a good and useful tool, since they grant a clear visual indicator of what type of work a task will be.

A screenshot of a computer

Description automatically generated

## Risk analysis

### Running out of time:

**Risk**: Due to my topic changing so recently, the time I have to fully develop this project to the standard I had set was reduced. This poses a challenge on how to reorganize my tasks in a new way to be able to achieve certain goals in a shorter amount of time.

**Solution**: I made sure to choose a topic I am more familiar with in order to prevent running out of time. My existing knowledge will help speed up the process.

### Complexity of subject:

**Risk**: I had to switch topics quite late into the process due to the complexity of my first choice. There was an unexpectedly steep learning curve that I was sadly unable to overcome, due to lack of good resources to learn from. Perhaps with more time I would have been able to continue with this work, but it was not wise to spend so much time in a project I was not fully sure I was going to be able to complete.

**Solution**: The change of my topic to something I am already more familiar solves the issue this time, but for future projects I will keep in mind I have to try to find as much research and resources on the topic before fully committing to it, or be more aware that without that much information to start with, I will have to take into consideration the time that will be spend figuring some aspects out and then plan that into my schedule for the project.

### Overscoping:

**Risk**: For my paper, I will be implementing and comparing 3 different types of ambient occlusion generation at runtime. It is of course a possibility that not all types of ambient occlusion will be covered because of a lack of time.

**Solution**: I will have to realize when to cut my losses and drop one of the methods of ambient occlusion, this will make the experiment less interesting of course, but still will be a very useful study for more future projects.

## SWOT

### Strengths:

-I am very eager to learn new topics, making the process enjoyable.

-This project presented new challenges that I haven’t faced before. This has improved my skills as a programmer.

-The Vulkan API is very well documented, giving me a lot more resources to work with.

-I have done research on this topic before, I did not start from zero.

### Weaknesses

-Difficulty getting the motivation to start working.

-Making tasks too broad to be effectively used for planning.

-Difficulty planning and keeping to a schedule.

-Due to ambient occlusion being an approximation, there is no real standard to compare it to.

### Opportunities

-This graduation work focusses on graphic programming, which is the subsection of programming I am most interested in. This means this project has already taught me a lot about the sector I want to work in, helping me become a better graphics programmer later in life.

-This project is a great portfolio piece that will help me get my name out there as graphics programmer.

### Threats

-By changing the topic of my work so late in the process, I have given myself very little time to bring it to a satisfying end.

-Because my subject is mostly analysis of framerates and GPU usage, there will not be any peer-reviewed metrics.

## Future work

As I recently changed subjects, there is work still to be done.

Research still have to be done, I know what types of Ambient Occlusion I will be researching, but the actual research has to be develop more in depth.

There needs to be a bigger collection of sources compared to what I have now in order to form a good base for the eventual paper.

The programming part needs to be finished to be able to implement the 3 different types of ambient occlusion and perform the experiment.

In the future, after this project is done, it will always be possible to improve this project both in optimization and new ways to generate ambient occlusion at runtime.