**Presentation Script for Audit 2**

*30th Mar. 2021, Team Cinefly*

Good morning everyone. I am the spokesman of the ANU Techlaunch - Cinefly project. My name is XXX. I am very glad to present our project progress with my teammates. Today we will divide our presentation into 4 parts: the introduction of the project, the progress we have made so far, the reflection, problem solving during the progress, and finally the audit summary and the future plan.

1. **Introduction**

Firstly, I will briefly introduce our project.

**1.1 About the Client**

Our client’s company, Cinefly is a media-tech company which aims to develop the most advanced patented storytelling and file platform. Cinefly formed a team of professional directors to design storyboards which can be directly used by users. Storyboards are patterns that help creators to determine the frame and split of the video, serving as guidance for those creators. Cinefly believes that they can help users become extraordinary storytellers, with students, researchers, volunteers, business, government, and other industries engaging together to share ideas, stories, and experiences. Cinefly share these videos to have positive effects on society, with the goals of tackling global issues such as Climate Change, Food and Plastic Waste and Poverty.

**1.2 About the project**

As for our project, Cinefly is working on developing a new mobile application. Our team is responsible for developing a machine learning algorithm using python. This algorithm can classify the input video sources provided by the client into several categories, by analyzing and extracting the information contained in the videos, it will automatically output some labels describing the videos. As for practical application of this algorithm, it can be used to help filter and categorize the videos uploaded to the Cinefly app, where user’s profile information can also be extracted from the videos.

**1.3 Stakeholder & Business Model**

During the last few weeks, we have done some research about the Stakeholders and the client’s Business Model to gain a better understanding of our project.

**1.4 Team member**

We have also discussed the skillsets of each member to assign suitable tasks to each person. So that we can make full use of each person’s strength to complete the project. Next, my teammate XXX will continue to talk about the second part.

1. **Progress Summary**

Thanks, and next I will talk about the progress we have made during the last five weeks. This part will be divided into 3 sections, the first is the overview of the progress according to the timeline, the second is the project management progress, and the third is the technical progress.

**2.1 Time slot/Critical points**

I will summarize the key progress according to the timeline, this time slot shows what decision and progress we have made during the last 5 weeks.  In week 2 we formed a team and formed a team charter by the start of week 3. After the team formalization, all members reached a consensus that we need to contact our client to understand the whole project. In week 3, 3 of our team members met the client face to face and discuss the pre-set topics. And after audit 1, we held a meeting to summarize feedback from the audit. In week 3, we sent several emails to our client, but in week4, we still do not get the response from Kai.  Kai was supposed to offer some statistics (especially the labels of sample videos) regarding our algorithm. At that point we decided to move on. And we modified our repository and landing page based on tutors and peers’ feedback. By the end of week4, we received replies from our client Kai, and we decided to do some research about our project. In week 5, we viewed several related research papers about video classification and made a prototype based on our research result.

We have also documented all the materials in our repo.

**2.2 project management**

Next, I will discuss our project management progress. In the past 5 weeks, especially in the two weeks after Audit 1, our team has set some strict ground rules and norms inside the team. The reason we mention it here is because we did not do this well before audit 1 and we reflected on those parts and made some improvement. In the following I will show our team charter and communication with customers.

**2.2.1 Team charter**

(1) Ground rules

As for our team charter. Firstly, we all agree with these three rules. They are: XXX

(2) Meeting regulations

Secondly, we have decided regular meeting time and some communication norms. As you can see, for example, internal meetings have two types, they are XXX, and they mean XXX.

**2.2.2 Client engagement**

As for client engagement, we set up several rules in the Team Charter. We usually contact our client via emails. Besides, we expect to meet with our client once per week, it can be via several channels, such as face to face meeting, online zoom meeting and telephone call for some urgent issues.

We expect that during the weekly meeting with our client, we can discuss some points including reporting the latest project progress, listening to the client's opinions, and trying to reach a consensus with the client about some key issues, for example, the available resources and schedules.

The biggest obstacle we have encountered is that we could not get in touch with the client before week 4. We only met with our client once during the last five weeks. As some technical details of the project have not yet been determined, we thought we were unable to continue our work on the technical parts, though we had started to research some video filtering algorithms.  Additionally, after the tutorial on week 4, we listened to tutor's opinions and contacted the course convener. Then we received a reply from the client on week 5’s Monday. This email answers some of our questions, but there are still some things we feel we need to meet with our client and discuss in detail. We are still trying our best to set a regular meeting time with our client.

That is all for project management progress, and I’m going to introduce our technical progress.

**2.3 Technical progress**

Next, I will talk about the technical progress that we have made so far. I will start with our project goal, then illustrate the algorithm design and show some outputs that have been implemented.

**2.3.1 Project goal**

As we have mentioned, our project is to develop an algorithm with python to classify videos according to a set of given labels. By doing this, Cinefly can extract user information from those videos.

**2.3.2 Research**

Next, I will talk about some research we have done and show how we designed the architecture of the algorithm based on these researches.

1. Traditional video classification algorithms

Before the rise of deep learning, most video classifications were based on hand-designed feature-extracting and typical machine learning methods.

What does it mean?

For example, in traditional methods, we can segment video into many component objects based on their color, pixel coordinates and timeline locations. There are many  approaches to do that, for example, the HOG、HOF、MBH algorithm. Then we can use a vector embedding approach to transform these objects into vectors.  Let's say if we have extracted 100 vectors from a single video, then we can use “Bag of words” algorithms to generate one big vector to represent the whole video. After getting the video vectors, we can perform traditional machine learning classification methods like K-means and logistic regression to get the final labels.

1. Video classification algorithms based on deep learning.

In practice, the efficiency of traditional methods is not high, and CNN, a typical algorithm in deep learning, is very extraordinary in image recognition, segmentation, detection, and retrieval. When using the CNN method, there is no need to manually specify the video features that need to be extracted. That is to say, we only need to take the entire video as input instead of manually extracting specific objects. This processing method improves accuracy. For example, a feasible algorithm is NetVLAD.

**2.3.3 Algorithm design**

This is basically the algorithm design framework of our project. This framework is based on some existing video processing algorithms which can be used to classify limited types of videos. As shown in the figures, there are two ways to implement our project goal, one is using a traditional approach and the second is to use deep learning algorithms. In this semester, we plan to at least deliver a quick prototype using a traditional approach. If everything goes well, we will look at the deep learning algorithm to improve the performance.

Next, I will introduce the traditional approach we are exploring now. As you can see from the picture, firstly, we will extract objects from the given videos using OpenCV technologies. Then we will vectorize these objects using some existing embedding technologies. After that, the bag of words algorithm will be used to generate a single vector representation of the whole video. This single vector can be viewed as a representation of the theme of the video. We will further apply some classification methods to determine the actual theme from the vector representation. The actual theme will function as the label we want. Currently we can extract objects from videos in real time. This will be demonstrated later.

**2.3.4 Some implemented outputs**

You may feel a bit confused about the technologies and algorithms we just mentioned. Now we are going to show a short video we recorded in the last few days. As you can see from the videos, we use some OpenCV technologies to extract () from the videos, other backgrounds are removed. We are hoping to input the processed videos to CNN to avoid some noise from the background.

1. **Reflection**

Thanks, and I will next talk about our reflection and problem-solving progress and then illustrate how we have learned and formed new consensus from the reflection.

As we have mentioned in the previous sections, after audit 1, we have received a lot of feedback from our tutors and shadow team. These feedback focus on four categories, they are output, decision making, teamwork and communication. After receiving these feedbacks, we re-build most of our landing page and repo and make them look neater and more standardized. Next, I will expand some other reflection points which are not mentioned above in detail.

Firstly, as for output, we got some feedback saying that there are spelling and grammar errors in our documents, and they are wordy and lacking intuitive charts and graphs. After considering these feedbacks as a group, we polish our documents in the repo. Additionally, we have also enriched the content of risk management, project timeline, project deliverable and competitor analysis based on those feedback.

Secondly, as for decision making, we recorded the decision-making process and the reasons why we made those decisions. At the same time, we have also improved the decision-making process in the team charter, for example, drawing a flow diagram about the decision making, with the client involved.

Thirdly, as for teamwork, we recorded the tasks that are assigned to each member during each meeting.  In addition, we have determined the weekly meeting time and meeting tools, and added the specific roles of each member in the Team Charter

Lastly, as for communication, the feedback said that although we had communication with the client, we didn't reflect it in the document. The main method of communication with the client was email, which was unproductive and inefficient, so we proposed to set a regular meeting time with the client, trying to ensure effectiveness of communication with the client.

1. **Presentation summary and future plan**

Thanks, and I will summarize our presentation and then talk about the future plan.

In this presentation we reported on some output of our project. Firstly, we introduced our project and showed some research results related to the project, for example, the client's business model. Then we summarized the key progress we made in the first five weeks, with the reflection in both project management and technical practice included. Finally, we showed how we reflected from the tutor and shadow team’s feedback and set up new regulations and plans based on the feedback.

We are now at the research and development stage of algorithm development, and we are expecting to start to explore more on coding from week 6. Our team will collaborate with each other according to team charter and complete the development of the algorithm.

That is all for our presentation. Thanks for listening. Feel free to ask any questions!