Quality and Risk Control

1.1 The Goals of Quality

- Correctness and Reliability

In the developed product, the functions should be correct and meet the requirements of the client, extracting and integrating information from the language of the videos. In addition, all functions should be reasonable and legal, and should not be harmful to the rights and interests of stakeholders.

This product can maintain certain performance. In addition, the product should be able to maintain the integrity of output data and input video. In the process of processing and analysing the video, the original video resources should not be damaged. When an incorrect type of input occurs, such as wrong file type or irrelative videos, the product could recognize and give notice in time.

- Usability

The developer should provide sufficient instructions when delivering the product, which means that the user can independently master the method of use. When the product is transferred, the content of the transfer should include the User Guidance.

In addition, product developers should provide sufficient code comments and instructions to ensure the maintainability of the product. There should be clear and distinct comments about important functions in product's code. If necessary, the developers should explain and comment on the parameters used in algorithms and models.

- Maintainability

The product should be designed with future maintenance and upgrades in mind. Customers and other users should be able to easily modify the parameters of algorithms and models. When client want to add more functions or make it learning in a deeper level, the development team does not need to make subversive modifications to the existing code. The developer's design should focus on facilitating maintenance, modification, and testing.

1.2 The Methods of Quality Control

- Perform performance testing

In the different stages of product development and algorithm construction, performance tests would be carried out according to the current development progress, including the accuracy of the output labels, the algorithm calculation speed, and the frequency of the missing labels. After that, according to the client's needs and the development schedule, it would be determined whether it is necessary to further improve the performance.

- Black box testing

After the construction of the algorithm and model have been basically completed, a certain number of black box tests should be performed with the training set of the video. Extensive tests would be performed to figure out if there are any vulnerabilities and bugs that have not been considered. Once these problems were discovered, the

developer need to immediately make corrections and record them in the current work log.

- Wrong Input Types Testing

After the basic structure of the product has been completed, the developer should try to use input with wrong types to test the program's ability of handling errors, including but not limited to the wrong file format, wrong video format, and video which contents are irrelative to the labels.

- Peer Review

After the code comments and the user guideline are completed, each member of the development team must conduct a peer review of the parts completed by others. When it is found that there is ambiguity, or the content is not detailed enough, it would be necessary to promptly give feedback to the members who wrote the part. Missing code comments or confusing variable names also need to be improved.

- Client Review

In each meeting with client, show the latest progress, and ask client for views and opinions on quality.

2.1 Risk prediction

The table records the identified potential risks and evaluates the level of risk. As the project progresses, different risk levels will change. Meanwhile, the table will also add new identified risks. The updated table will be displayed in the project repository.

Software Development Risk Register

High		Medium		Low	

	Risk Description	**Probability of Occurrence**	**Loss Size (Days)**	**Risk Exposure (Days)**	**Risk Label**
A	Insufficient QA time to validate by abundant training video.	45%	7	3.15	Development Plan
B	Too optimistic plan	35%	20	7	Development Plan
C	Insufficient product performance, some algorithms need to be redesigned	30%	14	4.2	Product
D	Lacking sufficient training resources	20%	10	2	Development environment
E	According to testing, user guideline or comments need to be completed.	10%	2	0.2	Client
F	It is difficult for developers to implement a necessary function.	10%	15	1.5	Personnel
G	External resource libraries cannot be used.	5%	5	0.25	Development environment
H	Feature creep	5%	5	0.25	Development Plan
I	Conflicts and Inequality between members	5%	10	0.5	Personnel
	Total Risk Exposure			19.05	

2.2 Risk solution

For the identified risks, the following table is the solution. For the risk changes that occur as the project progresses, the updated table will be displayed in the project repository.

Risk Event	Contingency Plan	Who is Responsible	Potential Cost
A	Set aside time for QA and focus based on quality assurance	Manager	Null
B	a) Use multiple estimation practices b) Development based on schedule	Manager	More planning time
C	Set aside time for QA and focus based on quality assurance	Manager	Null
D	a) Communicate with client in advance about available training resources b) Assign to someone to be responsible for collecting resources	Spokesman Manager	Collecting resources may lead to cost consumption
E	Set aside time for QA and focus based on quality assurance	Manager	Null
F	a) Reserve key members before the project starts b) Tutorial	Manager	Tutorials may lead to cost consumption.
G	Immediately switch to using other external libraries	Manager	External libraires tend to need money
H	Use user-based practices	Manager	Null
I	a) Communicate immediately to resolve conflicts b) Re-assign tasks	Spokesman	May cause delays in progress