Project management

To manage the progress of the project. Frequent meetings were held with the project supervisor. Where possible once a week, otherwise, once every two weeks. During the meetings, the project progress was discussed as well as objectives for the next week and any problems that asides following the meeting along with how the problems were solved. This meant the supervisor was involved in every stage of the process from start to finish.

To decide which project management methodology was the most suitable for the project, a few factors had to be considered. The most significant factor being that this research project is an individual assessment and as such, there are limitations to the amount of work that could be accomplished. On the Brightside, this also meant when it came to decision making this was a much faster process typically consisting of a discussion with the project supervisor about an idea for the project, followed by either implementing the idea or avoiding it at the advice of the supervisor. In addition, the timeline that was allocated to deliver on the brief meant that more focus needed to be placed on having the main key aspects of the project finalized and working as intended, leaving little room for additional quality of life features. The project was also self-funded, and this meant there were limitations in the equipment that could be purchased. Rather than creating a state-of-the-art drone with carefully selected components, emphasis was placed on purchasing a ready-made product with sufficient hardware and software capabilities that would allow the drone to be manipulated autonomously.

The project itself was much smaller in scale and while future applications could have larger impacts that need careful managing, current applications of the project allow room for playing around while also achieving seriously impressive results in contained spaces. The application of facial recognition and detection on a programmable drone created many avenues of adventure in the purpose of the autonomous drone, from utilizing it for filming to searching for items and following. This meant that it was difficult to stay grounded when testing the capabilities of the drone as certain avenues would require the drone to process what is perceived in a particular way or act a certain way when it is not in the position to accomplish an objective. The finished product achieves the main objective of the project however this also allowed the achievability of other minor objectives that were conveniently made possible through implementing the infrastructure that was required for the drone to be able to carry out the main objective. The result is a very flexible autonomous drone that can be applied to not just the main objective but a host of other objectives that would require minimum modification to the workings of the drone itself.

Software development

After careful consideration of the project objectives, the framework that was used, was the waterfall methodology. This is because the project in question was very linear and required that each stage be completed before the next could begin. To test the capabilities of the drone acting autonomously while following a recognized face, a face first had to be recognized and before a face could be recognized the algorithm for detecting faces had to be implemented and tested and then a machine learning model could be trained to allow the recognition of faces that were detected.

It was clear that the waterfall methodology would be the most appropriate for the project development because the end goal of the project was very clear and would not be changing. The stakeholder was also very clear on what they wanted from start to finish and this also had no need to be changed. The outcome of the project was also predictable, and the goal being worked towards was consistent.

As the project involved an autonomous drone operating primarily on computer vision this meant specially attention had to be paid to the way in which the drone responded to what it saw. This required a lot of experimenting on the drone to see how well faces would be picked up through the camera, the distance at which faces would be detected and how well the drone could follow and keep track of a face when in motion.

The beauty of the waterfall cycle is that it allowed the testing of various aspects of the project at different stages, making it easy to track changes, troubleshoot unexpected bugs and make the project modular so it could be applied to other projects with little modifications being necessary to the project code.

As a result of assessing this only being possible through experimenting, an experimental methodology was deemed appropriate.

Source:

<https://www.teamwork.com/project-management-guide/project-management-methodologies/>

Project milestones source: https://asana.com/resources/project-milestones