Individual Contribution Report

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Personal contribution to group project
1. I am the sponsor for the project, representing Oracle as the Senior Director in charge of the JAPAC region for Oracle Solution Centers. This project is carried out so that we could deploy the solution in Oracle Singapore office to protect an important asset from unauthorized access and possible damage. I laid out the project requirements as well as conducted periodic reviews;
2. I also functioned as the team leader, and I helped organized the design and development effort;
3. I conducted tests on the application and feedback to the team;
4. I helped out with the documentations, as well as the presentations.
5. I have also helped to architect a high level solution for the modules to meet the requirements – namely the Intruder Detection, Face Recognition and Alert Notification.

What I have learnt
I have learnt some useful techniques for intruder detection as well as the many methods of face recognition. Most importantly, how these techniques and methods can be applied to real world problems.
Some of the things I learnt about face recognition is that there are two broad types of use cases – one where the face to be recognized is positioned nicely for recognition, and the other where the face would be turning, moving about, and may be obscured. This project has the face recognition scenario falling squarely into the 2nd scenario – hence the challenges.
This is the reason that we are leveraging multiple techniques in order to have a greater chance to capture and recognize the faces.
If it is the first scenario, using the DLIB Face Recognition library will do the job. However, given the fact that the captured face could be tilted, or differ in expression, we need a model that is capable to be trained to recognize different tilts of the face, different expressions etc.
So the minimum number of sample picture for training is one. But to increase the effectiveness, more pictures are used.
An intruder detection would happen before the face recognition process is triggered. This is where we adopted the Background Segmentation technique wherein the threshold can be set for various levels of sensitivity. This is effective especially when no activity happens in the vicinity, such that a face recognition process kicks in only when activity is detected.

How I can apply the knowledge and skills in other situations
I work with customers in the region to apply some solution techniques to solve some of their real world problems. The skills that I learnt in this project can be applied to various other use cases as follows:
1. Person Of Interest (POI) Identification – picking out criminals or terrorists in a crowd. This is of interest in places like interior ministries, police departments, counter terrorist agencies etc
2. VIP Identification – recognizing VIPs in events. This would be required in events and public places where certain level of security or privilege need to be accorded