**PROJECT PROPOSAL**

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| **Date of proposal:** 7 Sept 2021 |
| **Project Title:** Detective Mask |
| **Group ID (As Enrolled in LumiNUS Class Groups):**  3Musketeers  **Group Members (Name, Student ID, Email):**  Anita Koo Shi Qi, S9444480B, anita.koo@ncs.com.sg  Hong Xiaohui, S9476943D, imhongxiaohui@gmail.com  Sanjeven Ramakrishnan, S9139938E, sanjeven.ramakishnan@ncs.com.sg |
| **Sponsor/Client:** *(Company Name, Address and Contact Name, Email, if any)*  *NUS ISS,*  *25 Heng Mui Keng Terrace Singapore 119615* |
| **Background/Aims/Objectives:**  During the Covid-19 pandemic, it is mandatory for persons who are 6 years old and above to wear a mask when leaving their homes. However, there are people still not wearing a mask when they are outside. And it is very difficult for staff/authorities to supervise the public to keep wearing a mask especially in a large-scale event. The project’s objective is to create an application to detect people not wearing a mask via video stream and images and thus notifying the staff/authorities who are near-by. |
| **Project Descriptions:**   1. **Solution:**  * A web application based on machine learning algorithms and deep neural networks would be developed. * Real-time video streaming mode would be provided which would allow users to detect people who are masked or not by camera in real-time. * Image mode would be provided which would allow users to upload images to detect people inside with masks or not. * Bounding boxes around faces with the accuracy of people wearing masks would be shown in video streaming and images. * Dataset contains a few thousands images of people wearing and not wearing masks. * Several trained models with the progressive approaches that improve the final accuracies.   **Good to have Feature**   * A notification function that messages to users with the screenshot of people who don’t wear masks.  1. **Why is our solution good?**  * Lesser manpower required to check if people are adhering to the rule * Minimize the spread of Covid-19 as wearing a mask can prevent transmission of the virus thus identifying those not wearing one, helps to protect others.  1. **Deliverables and Success Criteria:**  * A runnable pattern recognition system. * Dataset as described in solution. * Final report that describes techniques the 3Musketeers have used, system design, models, system performance and findings and discussions. * Repository that contains codes and models. * A video presentation file that contains a 10 -15 mins presentation * Slides of two presentations.  1. **Schedule Outline:**  * From 15 Sept 2021, the 3Musketeers will start to work on this project after the proposal is approved. * On 12 Oct 2021, the 3Musketeers needs to make the first presentation in which they outline the goals of their projects along with details of the data resources required/available, techniques/tools used, progress, etc. * On 14 Nov 2021, the 3Musketeers needs to handover the runnable pattern recognition system to NUS ISS.  1. **Project Strategy:**  * A traditional waterfall approach would be adopted in this project. The 3Musketeers would follow the project timeline to finish the system on time. * Risks can be assumed are   + Computation resources are limited that images dataset would take a long time to get trained   + False positive (e.g. someone wearing a shirt with a face on it) |