

BUSINESS CASE	
<b>Proposed Project</b>	Mirror++
<b>Date Produced</b>	October 2 <sup>nd</sup> , 2021
<b>Background</b>	<p>This is our Capstone Project for the University of Regina. We decided to build a smart mirror that functions using gestures and voice commands to navigate its user interface. We will extend the functions of smart devices that currently exist and use gestures to manipulate commands and perform tasks. The purpose of the project is to apply the skills we have learned throughout our SSE undergraduate degree and create an application that is interesting, useful to people, as well as providing an adequate amount of challenge for us to implement.</p>
<b>Business Need/ Opportunity</b>	<p>There is a market for people who are unable to utilize smart assistants such as Google Assistant, Amazon Alexa, or Apple's Siri since they have various speaking or hearing impairments. This makes devices such as google homes completely unusable for them. We intend to make a device that can replicate some of the smart assistant features using gestures while also maintaining the voice command features of original smart devices.</p> <p>The smart mirror utilizes a web camera and Python's OpenCV library to detect basic gestures to navigate through the device and issue commands. The mirror would connect to existing user data to display relevant information such as schedules, weather, reminders, etc. The device would also connect to other IoT devices such as lights, outlets, alarms, or other sensors to perform simple automations.</p> <p>The device can also be used by people who simply want a smart mirror that they can obtain data and automate things with. It is not strictly restricted to people with disabilities. For instance, if someone wants to use the smart device functions in a quiet setting, the smart mirror will allow them to without making noise.</p>
<b>Options</b>	<p>Option 1: We would split the work so that one member approaches the project from the front end, designing the UI and working to implement it, while the second member starts from the back-end, building the gesture recognizing technology, and then meet at the end to join the two to create a functioning smart mirror.</p> <p>Option 2: We could both start from the back-end and work together to design the gesture-recognizing technology and then work together on the user interface and connect both to have a functioning smart mirror.</p> <p>Option 3: We could both start from the front-end and design the user interface first, gesture recognizing technology next, and then join the two to have a functioning smart mirror.</p> <p>Option 4: We could do nothing.</p>
<b>Cost-Benefit Analysis</b>	

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Option 1: This option makes use of the skills of both members to work efficiently and then join completed modules to have a functioning final product. It requires an equal amount of financial contribution as options 2 and 3.

Option 2: This option would be better in building team bonds but would give us less time to figure each module out as the time to reach the next milestone would decrease. It would also be difficult to collaborate because the team members are in different provinces, so we would have to deal with more scheduling conflicts since working together would be a priority. However, this option could be good because we would have a clear idea of the gesture tracking technology capabilities very soon, so we could design the front-end accordingly or invest in more advanced technology if needed. It requires an equal amount of financial contribution as options 1 and 3.

Option 3: As with option 2, this would also be better for team building but more difficult to work efficiently. It would also make it harder to implement gesture-tracking technology to match the user interface if we completed front-end design first, since we would not know our gesture tracking technology capabilities. It requires an equal amount of financial contribution as options 1 and 2.

Option 4: This option would require no effort or knowledge, but we would also have no product at the end, leading to a failed project. This options requires no financial contribution.

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### **Recommendation**

Option 1 is the recommended option so far. It allows both team members to use their respective skills to further the project progress and will allow the team to have a general project prototype completed sooner. It is the most efficient and time-considerate option.

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