Jarvis Emulator  
Concept of Operations  
COP 4331, Fall 2015

**Modification History**

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| **Version** | **Date** | **Who** | **Comment** |
| v0.0 | 9/14/2015 | Robin Schiro | Created document |
| v1.0 | 9/15/15 | Robin Schiro | Updated details for ‘Current System’ |
| V2.0 | 9/15/2015 | Jimmy Lam | Added ‘Needs’ and ‘Impacts’ |
| V2.1 | 9/16/2016 | Manuel Gonzalez | Added ‘Users and Modes of Operation’ and ‘Analysis’ |

**Team Members:**

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1. **Current System**

Currently, most PC users cannot identify themselves and interact with their computers using a system of facial recognition. In an environment in which one computer is shared between multiple people, a user might have to enter a password to log on. After that, he must focus on his monitor to open desired applications and visit websites that interest him. These activities require the user to physically input information into the computer.

Moreover, most desktop sessions do not allow multiple users to interact with the computer in the same setting. If the computer is “occupied” by someone, another person must wait his turn before taking advantage of the computer’s resources.

1. **The Proposed System: Needs**

Webcam, database, front end GUI, microphone, web API, windows operating system

1. **The Proposed System: Users and Modes of Operation**

The system will handle only one type of user, no specific roles will be present. Each user will be authenticated through facial recognition, this will allow the application to be customized depending on which user is interacting with it. The system should be able to handle multiple users at once.

The system will perform a set of actions reacting to the user's behavior (leaving the room, speaking, not looking to the camera, moving, etc.), as well as executing commands detected through speech. Some actions may not be available for some users, depending on their profiles.

1. **The Proposed System: Operational Scenarios**
2. **The Proposed System: Operational Features**
3. **The Proposed System: Expected Impacts**

By detecting and interacting with the user, we plan to create an AI that will enhance the user’s desktop experience. This “Jarvis Emulator” will enable the user to open and close applications without lifting a finger, and will alert the user of relevant information based on the data input from the user when setting up his or her profile the first time that Jarvis adds the user’s face to its database.

1. **The Proposed System: Analysis**

**Expected Improvements:**

* The system should seamlessly integrate facial recognition, speech recognition and artificial intelligence.
* The system should feel like it “knows” the user.
* The user should be able to use our system without changing any of his/her usual routine.

**Disadvantages:**

* The user may feel uncomfortable of having a camera constantly watching what he/she is doing.

**Limitations:**

* It requires camera and a microphone to function.
* Only some online information will be available through the application's speech construction due to the difference in web APIs formats
* Due to the limited amount of information known about the user, the system may not be able to accurately predict some of the user's needs.

**Risks:**

* The current algorithm for facial recognition has some problems detecting specific users. We may not be able to fix such errors during our short development period.
* Many of the algorithms and techniques that we will be using are a bit out of the scope for undergraduate studies, and could be difficult to implement.

**Alternatives and Tradeoffs:**

* All algorithms that couldn't be enhanced will be discussed for further research.
* Mainly, the Web APIs our system should support. Time constraints prevents us from having an extensive list of supported websites for the application to interpret and read for to the user, so we will have to choose whether or not to implement specific websites, although a system can be designed for add-ons and plug-ins that could increase the amount of websites supported.