CSCI P445
Fall 2019

Feasibility Report

1. **Product:** This project is an open-source version of Churchill Solitaire card game, android application. The main addition from regular Churchill Solitaire game is that the user will be able to speak into a microphone and move the cards accordingly. There are two teams working on this project. The first team is responsible for the database and API and the second team is responsible for the speech to text part.
2. **Technical Feasibility:** Database team will be using the Android Studio and chosen programming language is Kotlin. Given that Android Studio and Kotlin are officially supported IDE and programming language for an android application.
3. **Social Feasibility:** The proposed addition will be accepted to the people who would be affected by its introduction. Effects on users from the introduction of the new improvement are users can play the game faster, and the game will be playable hands free so some disabled and people with hand injuries can also play the game. There won't be a need to retrain/relearn the game since we won't be changing any rules of the game.
4. **Economic Feasibility:** The benefits should out weight the development cost since we are not recreating the game, only adding a new feature. Real cost would be the development cost since there will not be any cost related to retraining/relearning. However indirect cost might occur from the application maintenance. Real benefit is more users since people will be more interested in the game because of voice control feature and some disabled people can play the game.
5. **Market Research:** According to the http://www.amputee-coalition.org/nllic_faq.html#2. There were 1,285,000 persons in the U.S. living with the limb loss (excluding fingers and toes) in 1996. The prevalence rate in 1996 was 4.9 per 1,000 persons. The incidence rate was 46.2 per 100,000 persons with dysvascular disease, 5.86 per 100,000 persons secondary to trauma, 0.35 per 100,000 secondary to malignancy of a bone or joint. The birth prevalence of congenital limb deficiency in 1996 was 25.64 per 100,000 live births. The prevalence rate is highest among people aged 65 years and older ~ 19.4 per 1,000. 50,000 new amputations every year in USA based on information from National Center for Health Statistics. Assuming. Those by now more than 2 million people have some kind of problem related to hand. Assuming only 10% of those people would like to play the Churchill Solitaire game now, that is 200,000 new users.
6. **Alternative Solution:** Alternative solutions are developing IOS version using Swift programming language or web application using HTML/CSS and JavaScript. They both seem to be good alternative solutions but Our team is already familiar with the android development so it will be more cost/time efficient than learning new environment and programming languages.
7. **Project Risks:** Some of the risks we can run into during development of this project are understanding the users' voice commands and correctly responding to them since there are different accents and vocabulary people use. Another problem we could face is how well the application work in a noisy environment and how fast can it detect the voice command.