



Software Engineering
Course Code: DA216A

EasySpeech Project plan

Team name: PMJ

Team members: Pontus Olsson Martin Eriksson Jonas Karlsson

Date: 2015-04-27



Software Engineering
Course Code: DA216A

Contents

1	Introduction and background	1
2	Aim and purpose	1
2.1	Research questions	1
2.2	Limitation	1
3	Method	2
3.1	Literature review	2
3.2	Benchmarking	3
4	Expected Results	3
5	Social and ethical aspects	3
6	References	3
7	Appendix and enclosures	4



1 INTRODUCTION AND BACKGROUND

This project will cover a small area of voice recognition using an Arduino board called atmega328p (ATMEL, u.d.), a mobile phone with a voice recognition software application that will compare your command with a local database. Depending on the command given to the database an “Id” will be sent to the Arduino via Bluetooth telling the atmega328p which light that shall be lit. This is only the first step towards bigger ambitions like creating a robot in medicine that is fully automatic and capable of understanding your problems through voice recognition. The project is only the tip of the iceberg because the area of voice recognition is very big and still in full development. Background knowledge for this project will be the scientific articles that were researched in this area, lectures in software engineering and lectures in programming courses.

2 AIM AND PURPOSE

The purpose of this project is to create a functional voice recognition application that will record your voice, return it in text, compare it to a local database with stored commands and give you the desired result.

2.1 RESEARCH QUESTIONS

- How can we make voice recognition a more reliable input?
- How can voice recognition be used to improve the quality of life?

2.2 LIMITATION

One limitation of this project is time. This is because the project was only given one month of work. Second limitation to this project is the budget, this is because the time limit was so short and not enough resources were provided to make something bigger and more advanced. The last limitation for this project is the Arduino board, the one used in this project (ATMEL, u.d.), is not meant to be used with voice recognition, there is an Arduino that is specified to be used with voice recognition but this was not available for this project (HMC, u.d.).



3 METHOD

3.1 LITERATURE REVIEW

- In (IR.A.Ramlee, 2013), a low-budget implementation of an automated home is performed. It exists of two different GUIs (one for PC/Laptop and one for Mobile phone). One interesting aspect of this project is the precautions used in case of malfunctioning hardware, for example; if the Windows GUI (PC/Laptop) does not work properly, the Android GUI (Mobile phone) can communicate directly with the microcontroller instead of going through the Windows GUI. This gives one ideas of different kinds of implementations. For example; instead of only having Bluetooth connection to the microcontroller, it is possible to activate WIFI connection when out of range for Bluetooth. The main difference of this project and the one being conducted is the usage of voice recognition, their future work was the implementation of voice recognition and therefor one might say that Easy Speech is an evolution of this project.
- In (Zhong, et al., 2014) they talk about how voice controlled systems can help blind or disabled people when it comes to doing something simple like calling someone or even search for something on Google. The article mentions a solution to everyday life for people that need a fast and easy way to interact with their phone when they might not have the possibility or time to reach it.
- In (Saume, 2012) they talk about voice recognition using android devices, and how it works. They discuss if voice recognition has come to the point that it is a reliable source of input, when it comes to input commands. They conclude that is it not developed enough for being a reliable input source, it often gets the words wrong or do not understand the words spoken. They tried the most popular applications in android like google word to text and they noticed a lot of problems with different letters and words.

When looking for articles for this project, the databases on HKRs home page (Anon., u.d.), were used and all searching was filtered with the words “voice recognition” and “android”. About 20 000 articles was found using these filter words. The articles used were the one most relevant to the project, this is because they were about voice recognition using android and also about Arduino. The articles that was discarded was either not looked at or had nothing to do with this project.

The conclusion drawn from the articles is that voice recognition is very interesting for scientist interested in sound manipulation and other aspects of sound implementations. Voice recognition is a very young technology that have not yet been mastered, because of the lack of interest in the area and there have not been a need for it until now.



3.2 BENCHMARKING

The product that will be complete after this project is only a prototype not ready for the market. This project in voice recognition is only the start of something that could be used in real life for example: Smart houses, medicine, cars and mobile phones.

4 EXPECTED RESULTS

The expected result from this project is there will be a functional and good working program, which will work well with voice recognition. It will also be able to turn on the right light depending on the given command, and store every given command in the database.

5 SOCIAL AND ETHICAL ASPECTS

As this project will be very small one and there will only be a prototype, this project does not have any negative ethical aspects. This makes the project harmless.

6 REFERENCES

1. IR.A.Ramlee, 2. 3. 4. 5. 6. 7. 8. S., 2013. Bluetooth Remote Home Automation System Using Android Application. *Bluetooth Remote Home Automation System Using Android Application*, p. 5.
2. Anon., u.d. *www.HKR.se*. [Online]
Available at: <http://www.hkr.se/sv/lrc/biblioteket/databaser/>
[Använd 17 05 2015].
3. ATMEL, u.d. ATmega48A/PA/88A/PA/168A/PA/328/P. Volym 1, p. 650.
4. HMC, u.d. HM2007. Volym 1, p. 21.
5. Saume, D. L. & C., 2012. En undersökning av röststyrning för Android-enheter. Volym 1, p. 35.
6. Zhong, Y. o.a., 2014. JustSpeak: Enabling Universal Voice Control on Android. p. 4.



Software Engineering
Course Code: DA216A

7 APPENDIX AND ENCLOSURES

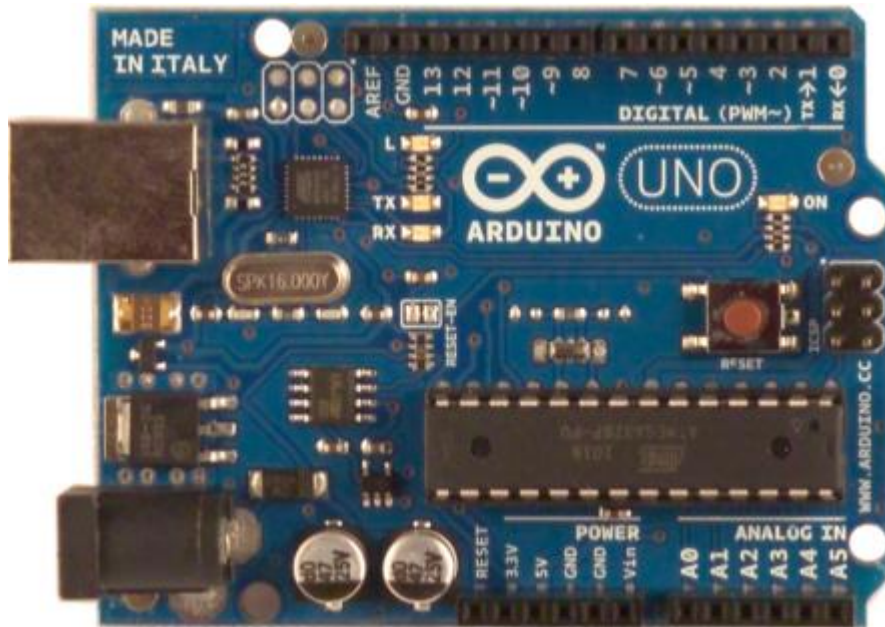


Figure 1. Atmega328p (microprocessor)