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Eaves Dropping Protection in Conclave  
by  
CSIR  
Proposed by  
Vector Software Developers

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A TENDER DOCUMENT FOR THE CONSIDERATION OF THE  
CSIR EAVES DROPPING PROTECTION IN CONCLAVE PROJECT

4 MAY 2015

EDITED BY

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*The University of Pretoria  
Computer Science Department*

## Summary



I am a very driven person with very clear goals in terms of my career as

well as my personal life. I believe in honesty above all else and making a valuable contribution towards society. In my opinion, one of the greatest injustices that can be done by man, is refusing to pass on what one has learnt and experienced, for without this happening there can be no progress. My dream is to be remembered for the feats that I had accomplished in my lifetime. I am extremely passionate about

technology, specifically software development, which is the reason why I chose to study Computer Science at a tertiary level. I am particularly fond of new challenges that test my abilities allowing for growth, self-improvement and the improvement of others. My family and friends are an extremely important factor in my life and I would see them proud of the man that I am, and want to be.

## Experience

### Barone, Budge & Dominick (Pty) Ltd

#### Bursar

BBD implements and maintains complex business systems. A customer with a requirement for custom software, which must fit into their business, and must meet the business goals approaches BBD with the goal in mind of obtaining a software solution thereof.

HOUGHTON ESTATE, JOHANNESBURG

Jan'15 – present

### University of Pretoria, Computer Science Department

#### Teaching Assistant

As a teaching assistant for Data Structures and Algorithms, Netcentric Computer Systems and Software Modelling it is expected of one to have a good understanding of design patterns, general algorithm implementations and data structures in the Computer Science field as well as knowledge of web development and other networking related software development.

HATFIELD, PRETORIA

Jul'14 – present

### Dynamic Visual Technologies

#### Junior Software Developer

DVT is a software development and related services business. They build, implement and support software, and provide those services that ensure business concepts are clear, that practical needs are met, and that software is written to specifications.

HYDE PARK, JOHANNESBURG

Nov '14 – Jan'15

## Technical Skills

**Technical expertise:** Software design and implementation. Big fan of Agile methodologies. I regularly utilise Java/C++, yet flirt regularly with C#. Proper knowledge of web technologies: HTML+CSS, XML, .NET, REST and JavaScript (including WebGL). Elementary knowledge of Artificial Intelligence related methods, such as optimisation problems.

**Natural languages:** Afrikaans (*mother tongue*), English (*full professional proficiency*), French (*elementary proficiency*).

## Interests

**Non-exhaustive:** Online gaming, running, music, reading, travel, foreign cultures, most things French related, cooking, open source movements, software development.

## **Non - Technical Strengths**

**Social skills:** I believe myself to be a rather "likeable" person, meaning I am very seldom found to be antagonistic towards others. I am a people person. I enjoy meeting and spending time with new and interesting people.

**Professional skills:** In a professional working environment I strive to be a very punctual, concise and informed individual. My approach towards professionalism relies on the concepts of honesty, determination, perseverance and most of all proper communication.

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## **Why CSIR Eaves Dropping Protection?**

**Because:** I am very interested in mobile development, particularly for Android devices. I feel this project is very applicable to modern day life and can actually make a difference in people's lives. Privacy is a very big issue in modern times, and it is something that I care a great deal about.

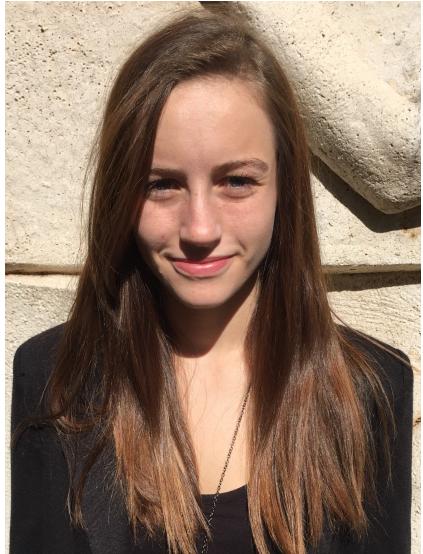
# Michelle Swnepoel

February 1, 1994

Last update on May 4, 2015

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## Summary



I see myself as a person who is invested in my personal growth in all aspects of my life. I am currently double majoring in Computer Science and am still deciding whether I want to do my honours degree next year or start working. When I feel everything around me is going to fast and that I need a getaway, I will most definitely grab the book I'm currently reading and enjoy a few pages. I also enjoy watching series, building puzzle and playing 30 Seconds with my mom and sister - and always a cup of coffee. One of my other passions in life is dogs and animals in general. Close friends and

family see me as a person who is diligent, respectful, sincere, modest and compassionate. I am an introvert, but enjoy observing and getting to know new people. I get my energy by accomplishing something that I had to work hard for and working with people.

## Experience

University of Pretoria, Computer Science Department

### Teaching Assistant

HATFIELD, PRETORIA

Feb'14 – Jul'14 and Feb'15 – present

I was a teaching assistant for a Introduction to Computer Science module, where it is needed to understand some basic concepts underlying computer science. I am now a teaching assistant for Data Structures and Algorithm, which requires the understanding of advanced data structures.

## Technical Skills

**Technical expertise:** Java, C/C++, assembly, CSS, HTML, JavaScript (also WebGL), XML, PHP, AJAX and jQuery

**Natural languages:** Afrikaans (*home language*), English.

## Interests

**Non-exhaustive:** I enjoy reading books, mostly fiction. Spending time with my family and friends is one of my favourite activities and also to go to new places to explore. The human way of living interests me and I enjoy reading up on it.

## Non - Technical Strengths

I consider myself as someone with good communications skills, enjoying it to work with people. I will always be open to new experiences and opportunities. Honesty is important to me, thus I will always be be open and trustworthy. I am also someone who grasps a new topic quite quickly. These strengths are propagated throughout my social and professional life.

## Why CSIR Eaves Dropping Protection?

**Because:** When I read the project proposal for the first time, the idea immediately jumped out to me. It sounds like a fun project to do as a team and something we can be proud of afterwards. Even though the project will challenge me and I will have to learn some new technologies and skills, it sounds still within in reach for us as a team to accomplish.

# Kale-ab Tessera

December 8, 1994

Last update on May 4, 2015

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House Boekenhout • LC de Villiers Campust • Hatfield • Pretoria

## Summary



Ambitious programmer with strong

leadership and relationship skills. Fort zone. Adaptable and very open to learning new programming languages and methodologies, in order to build on previous knowledge. Hardworking yet still innovative. I try to live a life with as many experiences as possible because I believe we can only learn and grow from things that challenge us. I am uncomfortable in my com-

## Experience

University of Pretoria, Computer Science Department

HATFIELD, PRETORIA

Teaching Assistant - COS 110

july 14 – dec 14

As a teaching assistant for Program design and Programming techniques good knowledge of object-oriented (OO) programming. Concepts including inheritance and multiple inheritance, polymorphism, operator overloading, memory management (static and dynamic binding), interfaces and encapsulation.

University of Pretoria, Computer Science Department

HATFIELD, PRETORIA

Teaching Assistant - COS 212

feb 14 – present

As a teaching assistant for Data Structures and Algorithms it was crucial to identify and recognise all the classical data structures; implement them in different ways; know how to measure the efficiency of implementations and algorithms; and have further developed their programming skills, especially with recursion and polymorphism.

Boekenhout Res

HYDE PARK, JOHANNESBURG

House Committee Member, Secretary, Head of IT and Communications

aug 14 – present

Helped lead various res students and mentored those with difficulties. I was also expected to solve technical difficulties such as problems connecting to the internet and also managing of social media.

## Technical Skills

**Technical expertise:** Proficient in Java, C++ and html. Experience with Assembly ,C, sql and delphi. Well-equipped in data structures and algorithms

**Natural languages:** English (*full professional proficiency*)

## Interests

**Non-exhaustive:** Keeping fit, playing tennis and soccer, dancing, cooking, technology trends , music, foreign cultures, software development and application of artificial intelligence

## Non - Technical Strengths

**Social skills:** I believe I am a born-leader and this has resulted in various leadership positions whether it be highschool, residence or the university. I am also quite easy to get along with due to my friendliness and communication skills.

**Professional skills:** In a professional working environment I am self-driven and willing to work as hard as is required. I also strive to be very respectful,punctual and diligent in anything that I do.

## **Why CSIR Eaves Dropping Protection?**

**Because:** I am interested in incorporating various technologies together and this project allows me to do so. We will be combining mobile app development with various speech recognition software, and this will be a challenge and eventually a reward. I also feel eavesdropping is a hot topic right now and I would like to learn how to protect others and myself from this privacy infringement.

# Keagan Thompson April 16, 1994

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Last update on May 4, 2015

## Summary



I am first and foremost career-driven. My primary aspirations in life are reaching for the highest branches of my career and having a healthy family lifestyle. While enjoying all aspects of life as a student, I still strive to always consider my future suc-

cesses in society and the impact that any actions I commit may have on others as a result. Whilst acknowledging that it is necessary to help others to the best of my ability in advancing their own lives, I take a larger interest in ensuring a secure, comfortable lifestyle for myself. The technological environment has captivated my interest from a very young age and my fixation on developing technology that will help the human race in experiencing a more enjoyable life is a testament to that. It is through software development that I hope to leave my legacy in this world, since I see this as the most ef-

fective way for myself to leave this world in a better state than I found it. I am eager to tackle new challenges and pride myself on the fact that I am always able to find a solution to a problem. It is for this reason that I can describe my approach to programming using the expression "Where there is a will, there is a way". Although I am confident of my abilities as a software developer, I respect the fact that there are people who have a much broader knowledge of the field than I do and am willing to learn from these people in order to further my own experience.

## Experience

### Barone, Budge & Dominick (Pty) Ltd

#### Bursar

BBD implements and maintains complex business systems. A customer with a requirement for custom software, which must fit into their business, and must meet the business goals approaches BBD with the goal in mind of obtaining a software solution thereof.

### HOUGHTON ESTATE, JOHANNESBURG

Jan'13 – present

## Technical Skills

**Technical expertise:** Software development aspects including software design patterns, data algorithms and programming fundamentals (Novice). I have experience in Delphi (4 years), Java (3 years), C# (3 years), C++ (1 year) and SQL (2 years). I also have a wealth of experience with web technologies such as HTML, XML, and JavaScript (Angular, NodeJS, BootStrap, jQuery). Additionally, I have a moderate knowledge of various Artificial Intelligence concepts and an extensive experience in Information System modelling.

**Natural languages:** English (*mother tongue*), Afrikaans (*full professional proficiency*), Greek (*elementary proficiency*).

## Interests

**Non-exhaustive:** Technology, Sports (Rugby), Socialising, Outdoors, Gaming, Travelling

## Non - Technical Strengths

**Social skills:** I am a person who has a witty sense of humour. I see myself as the forerunner of my group of friends and am always keen to organise a get-together at my place of residence. In terms of meeting new people, I portray my true self because I believe in always being who I am, and I have been in contact with many different kinds of people so I have a good understanding of communication with most people.

**Professional skills:** I always try my best to be punctual and to have work completed by the deadline as this is the only way a group will be able to complete a project effectively and I like to consider actions carefully in conflict situations rather than force my own ideas upon others.

## **Why CSIR Eaves Dropping Protection?**

**Because:** For every person involved in IT, malware is a dark interest. I have always been interested in creating malware but only to be able to help people understand how to avoid it. I also want to learn more about mobile app development and so I see this project as a good opportunity to broaden my knowledge within the software development sector, and also to create a product that very well could become useful to businesses around the world.

# 1 Project Execution

## 1.1 Client-Developer Communication

Even though we as a team will be able to work independently, we do acknowledge the need to be in contact with the client in order to keep him/her informed. We are flexible in terms of which technologies to use if it is not possible to meet physically. Skype, WhatsApp, Google+ Hangouts and E-mail are some of the various ways of communicating which we are comfortable with. We will always make sure to keep the client in the loop of our project, whether this is by physically meeting or by using digital communication. If it is needed to physically meet with the client, we will always schedule the meeting far ahead and will be reliable in terms of showing up on time, etc.

## 1.2 Ideas and Technologies

### 1.2.1 Technologies to be Used

After due consideration and taking into account the received requirements, the following technologies will possibly be used:

**In order to develop the back end of the system (API and Web Server):**

- NodeJS  
Node JS is a very popular web server hosting technology at this moment due to its reliability, scalability and speed.
- Express Framework  
This framework will be used in conjunction with Node JS.
- JavaScript front-end frameworks such as Bootstrap  
This will be utilised for the GUI of the web server - simplistic, concise yet professional.

**For the mobile app:**

- Xamarin or Android Studio  
The decision has yet to be made on whether the C# Xamarin approach will be used or the traditional Java in Android Studio approach, to develop an Android application. One of these two will however reign supreme.
- Near Field Communication (NFC)  
NFC is a very important part of this project. Luckily it is not necessary to reinvent the wheel. NFCTools is a collection of libraries and tools for NFC in Java. The targeted devices are desktop Reader/Writer and Android smart phones. These libraries are open source and available for use in a project such as ours.

### 1.2.2 Implementation Ideas

The project, from a development point of view, can be regarded as consisting of three individual parts.

1. Malware component  
Since malware should technically not be known to the user as being installed, some research will need to be done on how to hide an app from a user, as well as getting the malware installed on the user's device without the user's proper consent and knowledge.
2. Android App using NFC Component  
The most challenging part of this component will most probably be the NFC interaction and user identification.
3. Web Server / GUI Component  
In order for the android app to communicate with the server, some sort of hosting solution will need to be investigated. There are however many freely available service for Node hosting.

### 1.2.3 Project Extension Ideas

The following was considered as possible future extensions on the current project specifications:

- Direct upload to server

Instead of the malware sending the voice recording by email, one could perhaps use a server using some form of encryption and a very specific communication protocol which would then deter authorities to send fake data to the receiver in order to catch the culprit. One could perhaps disguise it in the form of something that looks quite normal, like uploading it to DropBox.

### 1.3 Deliverables

1. Developed Mobile Application
2. Developed Mobile Malware
3. Developed Web Server
4. Any additional functionality group wishes to add