UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

PROJECT TENDER

PROJECT

SMARTIMAGEIDENTIFIER

CLIENT(S)

W.A. BURGER- WABURGER@WILLBURG.CO.ZA

TEAM: TERABITES

TEAM MEMBERS

Christiaan Nel

Dzilafho Mulugisi

Eltom Tom

Gershom Maluleke

DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF
PRETORIA
May 2, 2016

Group Background

- Our team is made up of individuals that are all studying towards different computer degrees. We bring a unique perspective as we are able to give individual ideas on how to solve a problem, and at the same time incorporate other members ideas to form an ideal solution to any problem. Our group understands each other and each person brings something different to the team.

- As individuals we are strong in specific situations, together we are stronger in every situation that will come our way. For this project we have discussed that instead of using a divide and conquer method, we will unite in completing each phase of this project as quickly as possible. This allows us to ensure that we do not forget to implement a point that might have been overlooked as this often occurs when a member works alone. It also guarantees that once a phase is completed we do not move backwards only forward.

- We are all excited and prepared to work hard and well on this project and we believe that you will be satisfied with the outcome. We are more than prepared to research and learn about the fields we currently lack. We would like to do this project because it is a unique and interesting project that would allow us to expand our skill set and challenge us in a way that has not been done before.

Team Members

Name: Christiaan Nel

Email: u14029368@tuks.co.za

Phone: 0728359073

Field: BSc IT

Interests

- Solving problems through programming
- Gaming

Technical skills

- Programming: C, C++, C#, Java
- Web development: JavaScript, PHP, SQL, HTML, CSS
- Good at mathematics

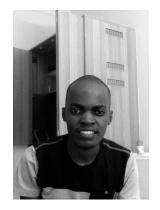## Past experience which might be relevant for the project

- COS 301 Mini project which gave me some experience in how version control systems and automated build systems work, as well as how different teams working on different components can collaborate to work on a single project.

Non-technical strengths

- Fast learner
- I can work hard on solving a problem

What makes you want to do the project

- It's an interesting idea
- I want to learn more about machine learning and image identification

Name: Dzilafho Mulugisi

Email: u13071603@tuks.co.za

Phone: 0798056530

Field: BSc Computer Science

Interests

- Automotive Journalism
- Web Technology
- Building Computers
- Self learning
- Socializing

Technical skills

- Fixing Computers
- Java, C++, C, Intel Assembly and Web Programming
- Fault Detection
- Operating Systems
- Databases

Past experience which might be relevant for the project

- The UP Department of Computer Science recently prepared us for effective team work. I worked in a mini project were in we had to deal with various constrains in groups. The challenges included differences in level of knowledge, interest, personalities and different types of pressures including time amongst others. From this I learnt how to work when under pressure and stepping out of my comfort zone and work with people whom I did not know.

- I have attended numerous workshops by Studietrust in which we were exposed to challenges and had to work in groups to resolve the provided problems. In order to solve the problems we had to combine the best of each group member. I can now effectively work well in groups even when the personalities of the group members are opposites.

Non-technical strengths

- Team Work
- Quick learning
- Leadership and Planning
- Effective listening and discussion
- Future Visualization

What makes you want to do the project

- I enjoy being part of development of relatively new technology. The good cause that the technology is meant to be used for also means that my hardwork is going to result in numerous lives being saved.

- The project is very interesting because image analysis is not something I have experience with but I am very interested in. The project arouses my curiosity and I find it intriguing to learn about image analysis and the whole technology behind it.

Name: Elton Tom

Email: u13325095@tuks.co.za

Phone: 074 902 1879

Field: BSc Computer Science

Interests

- Solving problems

- Web programming

- App development

- Business process management

Technical skills

- C++ and Java skills

- Mathematical literacy and Solving problems

- Front-end (HTML, CSS, JavaScript/JQuery) and back-end (PHP, MySql) development skills

Past experience which might be relevant for the project

- I have some past experiences in designing and coding applications in Java and C#, but also this project interests me so much that I would be able to go beyond my boundaries and gain valuable experrience after completing it.

- I recently worked in a project at the university which introduced me to some extensive software development, which included working in teams, and working on different stages of software development (gathering and documenting requirements, designing, testing and so on).

Non-technical strengths

- Working under pressure

- Working within a group

- Clear and concise communication

- Intellectual curiosity

What makes you want to do the project

- Technology is a beautiful art, and in many ways it really helps us humans with tasks that are at times difficult to complete on our own. The moment I had finish reading the project specification, I was filled with excitement from this project, and though it is very challenging it is definitly worth it.

Name: Gershom Maluleke

Email: u13229908@tuks.co.za

Phone: 0728359073

Field: BSc Computer Science

INTERESTS

- Programming(Application, Game and Web development)

- Technology and Gaming

- Travelling, hiking, Soccer, volunteering, Boxing, Cricket

TECHNICAL SKILLS

- Languages: C, C++, Java, Python, Delphi, SQL, HTML, JavaScript, PHP, AJAX, JSON, CSS3 Test Driven Development (TDD), Teamwork

- Tools: JBuilder, Dreamweaver, Rational Rose, UltraEdit, BorlandC++Builder, Oracle SQL*Plus

- Operating systems: Windows, Linux, Mac OS X.

- Graphic design: Adobe Photoshop, Adobe Illustrator, Blender, 3DMAX, MAYA

Past experience which might be relevant for the project

- We recently did a Mini Project where i was part of the team that was supposed to implement the backend functionality. I learned a lot of technologies that will be usefull when doing this project, such as testing frameworks like Spring, building tools like Maven. We mostly used Java to implement and anotate entites for the mini project which were then persisted to the database using PostgreSQL, so I believe I know more than enough technologies to be able to finish this project with ease.

Non-technical strengths

- Willingness to research

- Teamwork mentality

- Ability to handle failure

- Ablity to plan

- Problem solving skills

What makes you want to do the project

- I am eager to learn and stay up to date with new innovations and IT related products. I am a confidant, energetic young person, seeking an opportunity to expand my horizons. I dont mind putting in the extra effort and time, until the problem is solved, which also makes work under pressure well.I am able to adapt to different environments, and learn to use new technology, programs, and programming languages well. I prefer to start working earlier than leaving it for last minute; however I can work under pressure as well.I am a hardworking and dedicated student who loves a challenge and works well under pressure.

Project execution

Development methodology

- We will be using the Waterfall Methodology (also known as linear-sequential life cycle model) which is a linear approach to software development. The reason for choosing to go with this process is because the project itself is quite large, and thus in order to do every part of the project correctly and efficiently we will need some sort of consistency which is what the Waterfall methodology guarantees, as we as the developers will agree on what will be delivered early in the development lifecycle. This makes planning and designing more straightforward. And also progress is more easily measured, as the full scope of the work is known in advance.

Keeping the client informed

- The weekly four hours support will be split into to sections where we will use the initial two hours to introduce a bundle of steps that we are going to take and activities that we will be busy with during that week. The remaining two hours will be used to get feedback on the things and implementation that we did during the week.

- Our Git repository will be accessible to you so that you can check at your leisure the progress of the development. Alongside the Git repository we will also make use of the wiki page in GitHub to make the checking up easy as this will act as our diary in the development process. The whole group is also available via Slack to have a group chat with the client if desired.

Initial Ideas

- We will try to use an image identification library such as OpenCV, an open source library aimed at real-time computer vision, to help with the detection of people in photos. Using multiple photos we will try to optimize the parameters at which it operates in order to maximize its accuracy.

Technologies

- Build automation tool, such as Gradle or Apache Maven

- Revision control system, such as Git via GitHub

- Back-end image processing component to be written preferrably in JavaScript or otherwise in Java or C#

- Some pre-existing library for image processing, such as OpenCV

What the client will receive at the end of the project

- Source code for the SMART ID APP

- Architecture of framework

- User manual

- Built and deployed scripts