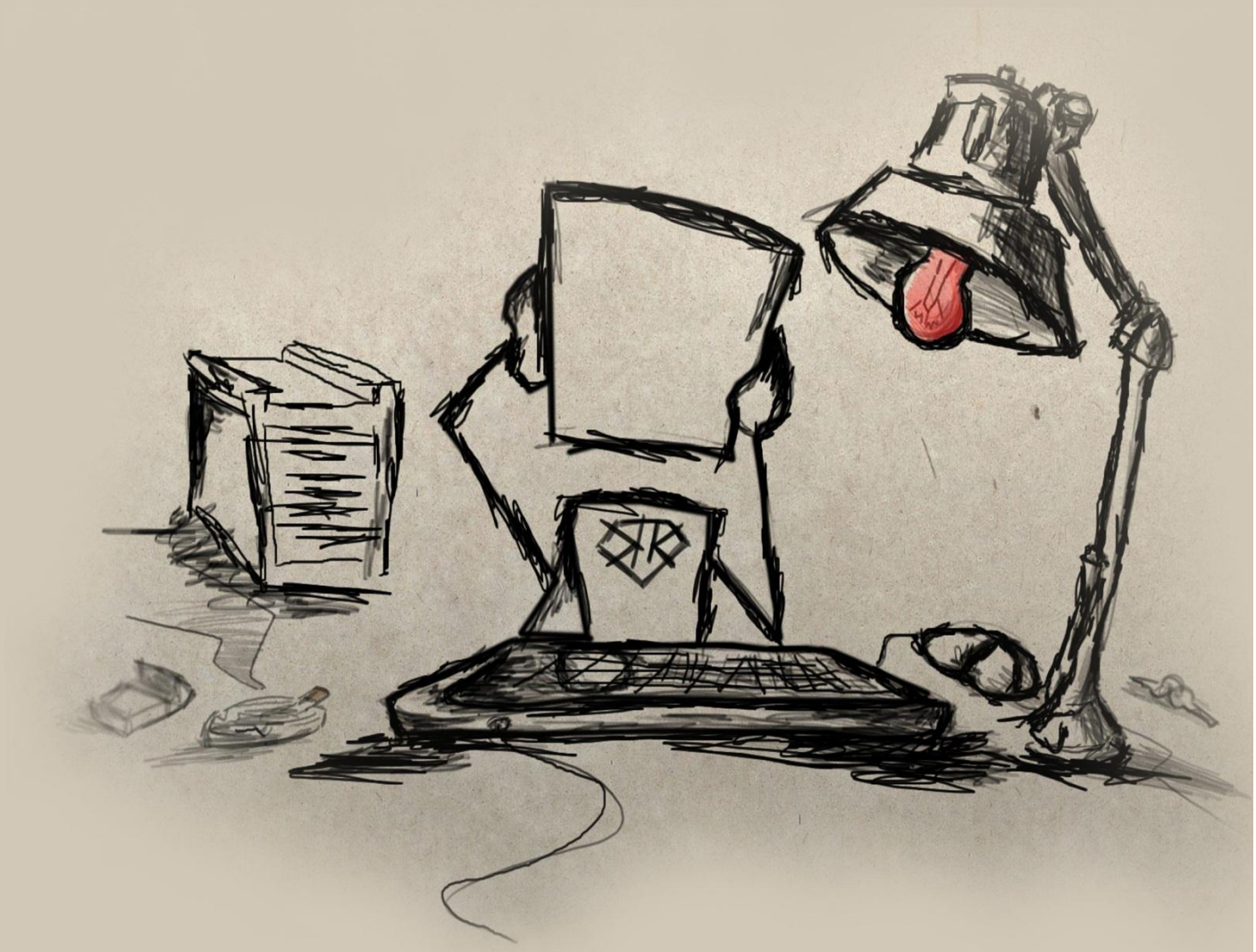
THE GRUNERS



Tender Proposal

Project : CSIR – Mobile Augmented Reality

Number Plate Recognition

18 March 2013

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1. Introduction

The main objective of this document is to bring forth and elaborate a proposal to tender the project, Mobile Augmented Reality Number Plate Recognition (MAR NPR), proposed to the University of Pretoria by the Department of Defence, Peace, Safety and Security, at the Council for Scientific and Industrial Research (DPSS, CSIR). It briefly describes the project objectives and requirements as understood by *The Gruners* team. It also presents an outline of the proposed solutions and additional suggestions.

2. Team Description

The Gruners is a competitive team of three students in the Department of Computer Science that have been in collaboration for the most for their undergraduate years of study. The name of the team was inspired by a Computer Science professor at the University of Pretoria, Prof. Stefan Gruner. We have, throughout our different years of undergraduate study, been exposed to numerous technologies and techniques that do not only effectively address software design and development problems, but also provide efficient solutions for current industry development problems. We rely not only on the technologies that we have learnt thus far, but we rely as well on skills such as problem-solving, systems design, decision-making, collaboration, and work-balance in order to successfully develop different kinds of efficient systems.

3. Problem Description

Applications for the Augmented Reality technology need to be extended into military and police disciplines. The Augmented Reality Number Plate Recognition application can be a vital tool to help mobile units get further information (whether a vehicle is a stolen one, prior incidents etc.) of a particular vehicle using a smartphone.

In a nutshell, the Mobile Augmented Reality Number Plate Recognition system is a smartphone-anchored application that will be used to perform real-time capturing and extraction of vital information, about vehicles from a live video source. The system will then further transfer the extracted information to other application modules through web services. The envisioned application must be designed and developed as a native Android based application.

4. Proposed Solution

4.1 Related Projects

Acrossair Augmented Reality Browser

Acrossair Augmented Reality Browser is an application for the iPhone environment which allows one to discover and navigate local information easily. For instance, one can use the browser to pan around a location in search for restaurants, and then the browser will keep retrieving relevant information in real time as the user pans through the location

4.2 Fundamental Solution

The mobile module of the application is expected to incorporate the following functional requirements:

- Real-time video detection from device's camera.
- Ability to detect number plates and their contents.
- The module must present a simple, visually appealing, user friendly settings user interface.
- Transmission of number plate information to the web service module.
- The ability to retrieve information based on number plate from the web services to be visualized onto the camera view in real-time.

The Web application module is expected to incorporate the following functional requirements:

- Retrieval of number plate information from the Android module.
- Query the database for information based on received contents from the Android module.
- Returning the query results back to the Android module.
- A client side web application for viewing all stored number plate data with a visually appealing, user friendly interface.
- Detection of the vehicle's attributes such as the make, model and colour based on the scanned number plates.

4.3 Additional Suggestions

Web Application Module:

- We suggest, for the Web module, that we should use HTML5 standard in alongside CSS3 styling to ensure a visually appealing, user friendly front-end for the user, while conserving system integrity.