



Obstacle Warning for Texting Group Project

This document describes the subject and the general time schedule of the group project of Nino Hail and Alex Gross, beginning in the spring term 2013. Adaptations or changes can be agreed upon by the advisors.

The use of Short Message Service (SMS) or other messengers is a popular method of communication for all ages. If one looks around at a crowded place, very often one will see people that are texting while walking – and paying more attention to their mobile phone than their surroundings. While this can lead to amusing scenes for the innocent bystander, for the people texting, an appearance of a random obstacle in their path might not be advantageous.



We Got It Constantly by ShuttrKing|KT, CC BY 2.0

Why not use the camera of the mobile phone to support the experience of a “harm-free” walking while texting environment? While not every obstacle can be recognized (like the truck coming from behind you), at least some level of improvement can be gained by warning the user of things in front of them.

Starting with the simplest vision mechanics, one can implement more and more advanced detection mechanisms and maybe also incorporate the other sensors of an advanced mobile phone.

Requirements: Good programming skills (preferably in Java) are required. Some creativity and experience in Android programming are advantageous. The student(s) should be able to work independently on this topic.

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Detailed Project Outline

We denote the following primary tasks mandatory (on the right side you find a rough estimate for the time that we allocate to the respective task):

- Get familiar with existing methods for image recognition. (★★)
- Figure out how to run the software in the background to provide warnings during normal phone use. (★)
- Design and implement an object recognition algorithm that recognizes objects from the camera image stream of the phone. (★★★)
- Come up and implement a appropriate method(s) to warn the user for incoming objects. (★)
- Study and report possible improvements using other sensors or data such as GPS combined with Google Maps. (★)
- Write a report documenting the development process and the final status of the application and discuss the findings. (★★★)
- Prepare a presentation about the results of your work. (★★)

The Students' Duties

- One meeting per week with the advisors to discuss current matters
- Regular check-ins into the provided *revision control system* (Subversion)
- A final presentation (15 min) of the work and results obtained in the project
- A final report, presenting work and results