

eCall – smart alarms for traffic accidents to increase the precision of ambulance dispatch and improve chain of care (Swedish: *eCall* – smarta larm vid trafikolyckor för ökad precision i ambulansdirigering och förbättrat vårdförlopp)

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Introduction

Every year 1.3 million people are killed in road traffic accidents around the world, and 20–50 million are injured [1]. We are developing methodologies for improving the rescue process for traffic accidents, by gathering and interpreting valuable information from the scene of accident. An important practical implementation for this research is smart alarms, so called *eCall* solutions, for cars and vulnerable road users such as bicyclists. In the future the emergency center will receive the exact position of an accident along with other valuable information to increase the precision of judging the severity of the accident, aiding swift dispatch of the right competence and equipment to the site of the accident. This has potential for saving lives and mitigating injuries while optimizing the use of ambulance resources.

Materials and methods

We are developing algorithms that can estimate the likelihood of any passenger being severely injured following a crash using input from vehicle sensors (Fig. 1). This is done by analyzing traffic accident data and derive risk curves for specific crash situations where the accident severity as measured by variables such as impact speed, impact angle, etc. is linked to the injury outcome.

We are investigating the feasibility of using a smartphone to automatically detect a bicycle crash using data from the integrated sensors such as accelerometers and gyros (Fig. 2). Data is collected from normal cycling and crashes are simulated. The potential for the method and the accuracy for crash detection will be evaluated using computer models and test bicyclists.

Results and discussion

The latest results from analyses of Volvo Cars' accident databases and the initial experiences from developing a smartphone application for detecting bicycle accidents will be presented. *eCall* is promising for improving the acute care for traffic accident victims.

References

[1] WHO "Global status report on road safety: time for action" ISBN 978 92 4 156384 0, 2009.

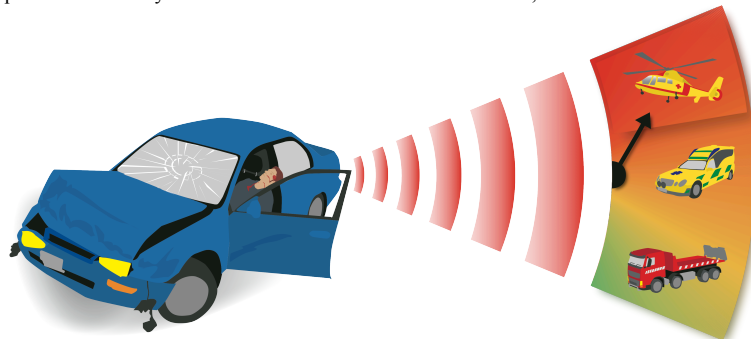


Fig. 1: Information recorded by vehicle sensors can aid in planning emergency dispatch.



Fig. 2: A smartphone app for bicyclists and other vulnerable road users could automatically send an alarm in case of a crash.