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Nice, Berlin, London - if every car had autonomous emergency braking system for forward collisions avoidance

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Abstract

Nice (July 14 2016), Berlin (December 19 2016), London (March 22 2017) and Stockholm (April 07 2017) – these four European metropolises are marked by a common occurrence burnt deep into the souls of all European citizens: recent terror attacks made by cars injuring several accidental people passing by. These attacks shall cause fear across Europe where state security bodies and units are trying to avoid those. Yet, there is already the technology to enhance the security of all people reinforce the effort aiming to prevent such accidents or car assaults: the autonomous emergency brake assist. This paper aims to open discussion about the (im)possibility of integrating the autonomous emergency brake assist in all cars and how it would impact such attacks.

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1. Introduction

Since the post-Cold War Europe has been a very secure place to live¹. The European Union (EU) committed itself ‘to safeguard the common values, fundamental interests, independence and integrity of the Union’² already in 1997³ and has been confirming its intentions in each new revision of the treaty since then⁴. Security belongs among basic

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social rights of citizenship⁵ and the EU obliged itself to provide this right to all its inhabitants. The EU engaged itself in establishing the Common Foreign and Security Policy and the European Security and Defense Policy for better coordination and integration of policy bodies in the field of foreign affairs, security and defense⁶ to create a better world⁷. To follow these goals, EU designed the European Security Strategy⁸ and the cooperation of police units and institutions of individual states towards common collaboration across borders has been established in the Schengen Area and within EU. Several law instruments have been created to support police and justice cooperation in EU context⁹. All this has been exploited to establish security in the EU and to create a safe place for living of all EU citizens and inhabitants.

Since the Second World War, in particular since the rise and fighting of the Islamic state (ISIS) and the war in Near East (Syria, Iraq, etc.), European countries have been a popular destinations for large-scale immigration and refugee flows from the rest of the world¹⁰. The flows of immigrants into Europe can be seen in the statistics provided by Eurostat data indicating that 12% of the EU current total population aged between 24 and 54 are first-generation immigrants and additional 5% of current EU population is built through second-generation immigrants with at least one parent stemming from outside of the EU^{10,11}. The increased numbers of immigrants and asylum seekers arriving in the EU and the terrorist accidents in European metropolises in recent years¹² are increasing security risks and fear in souls of EU citizens.

Despite all the endeavor of the EU in the field of ensuring security of EU inhabitants, the terrorism found its way beyond the borders of the EU and became a threat to common safety: Paris in France January 7-9 2015¹³ (Charlie Hebdo), Copenhagen in Denmark February 14-15 2015¹⁴, Saint-Quentin-Fallavier in France June 26 2015¹⁵, Paris in France November 13 2015¹⁶ (Stade de France explosions, Restaurant shootings, Bataclan), Paris in France January 7 2016¹⁷ (Police station attack), Brussels in Belgium March 22 2016¹⁸, Nice in France July 14 2016¹⁹, Ansbach in Germany July 24 2016²⁰, Berlin in Germany December 19 2016²¹, London in Great Britain March 22 2017²², Stockholm in Sweden April 7 2017²³, etc.

Among those assaults, some terrorist attacks, in particular Nice¹⁹, Berlin²¹, London²² and Stockholm²³; were done by car driving killing and injuring several people of accidental passing-by pedestrians causing high numbers of casualties. These car attacks on pedestrians mark a transition to a global terrorist movement in the transformation of the Islamic State²⁴.

At 22:33h on Thursday, July 14 2016, in Nice, France, a hijacked 19 ton-heavy cargo truck crashed into crowds of pedestrians gathered along the waterfront to celebrate the Bastille Day. This terrorist assault wounded more than 400 people and killed 86 pedestrians over a distance of about 1.77 kilometers²⁵ within minutes.

At 20:02h on Monday, December 19 2016, in Berlin, Germany, a stolen cargo truck rammed into crowds of pedestrians and bystanders visiting Christmas market. This terrorist assault wounded more than 55 people and killed 11 pedestrians²⁶ over a distance of about 50 meters within minutes.

At 14:40h on Wednesday, March 22 2017 in London, Great Britain, a rented car was driven into pedestrians and bystanders along the pavement on the south side of Westminster Bridge near Westminster Palace. This terrorist assault wounded more than 50 people and killed 4 pedestrians²² within minutes.

At 14:53h on Friday, April 7 2017, in Stockholm, Sweden, a hijacked truck was driven into bystanders and pedestrians in a busy street in city center. This terrorist assault wounded more than 15 people and killed 4 pedestrians²³ within minutes.

Cars and trucks are being hijacked by terrorists and used as a killing tool injuring passing-by pedestrians and bystanders aiming to kill and hurt as many as possible in European metropolises. Actors are trying to spread fear, dread, fright, panic, horror and terror among wide public. Attacks done by lone wolves, terrorists who are not parts of a group or directed by an outside organization acting without external guidance posing threats²⁷. All the casualties and victims died having their lives ahead of them, full of not yet realized dreams, leaving relatives behind... Is there no way avoiding or mitigating such assaults? Can't we prevent those terrorist attacks? There is already the smart technology that stops the car facing a threat in dangerous situation: the autonomous emergency brake assist systems with preview function²⁸ and pre-crash assist²⁹ included in forward collision systems³⁰. This paper intends to open discussion on the (im)possibility of integrating the autonomous emergency brake assist in personal cars and trucks aiming to enhance overall security of pedestrians and bystanders in times of vehicular terrorist assaults similar to Nice, Berlin, London and Stockholm. By reviewing available literature it analyzes whether the autonomous emergency brake assist could have saved some lives of attacked bystanders and pedestrians. Through a projection of

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