DeMS White Paper

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Abstract
Privacy concerns and the high demand of GPU capabilities are the main problems when dealing with real time video processing, security and safety in the industry and growing cities are some of areas that demand the most video processing. The rising power of small computers and the increasing availability and effectivity in machine learning techniques allow to design devices capable of detecting events in real time without the need of internet connectivity and a cloud computing service, saving money and solving the increasing privacy problem for business and government.

Keywords
Computer Vision — Smart Cities — Offline computing — Artificial Intelligence

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Introduction

Privacy concerns, low internet conectivity and low computational power are some of the main reasons to improve real time video analisys to work in local devices.

1. Deep Micro Systems

Deep Micro Systems is a Bolivian Start up in the field of computer vision and Smart cities. Our mission is to expand the awareness and knowledge industry and governments to smart cities, providing security, efficiency and generating solutions to critical problems in a measurable and sustainable way.

Road Insecurity The high numbers in roads accidents is currenlty a great concern for Bolivian government. New technologies are needed in order to reduce this huge numbers. As Internet connectivity in Bolivia is expensive and low efficient compared to our neighbor countries, the need of offline processing is a major concern. In order to achieve this Deep Micro Systems designed an All In One Device capable of detecting traffic Infringements and generate valuable data for city planning.

With the main purpose of generating security in roads and streets, Our camera is capable of detecting events in real time video.

Applications of computer vision Besides road infringement detection, Deep Micro Systems works with computer vision, and it's variety of applications in industry and government. Some of other projects for Deep Micro Systems in the short term are:

- Optimal city design, parking, roads and flows
- Traffic accidents forecast
- Smart traffic light managing

Intelligent devices

The lowering costs of pocket computers and the increasing power and efficiency of machine learning techniques allow to build small devices capable of solve huge problems in cities and in the industry.

Figure 1. All-In-One computer vision device

Currently Lu-Cam, our smart traffic enforcement camera is a 8x9x16 cm device capable, as seen in figure 1, and it is capable of detecting events in real time video. Rather than getting frame features with convolutional neural networks, different techniques regarding real time fixed video cameras arrise, such as [1], in order to improve efficiency without missing the main objectives of a project.

Real time monitoring and data analysis

2. On the Edge Computing

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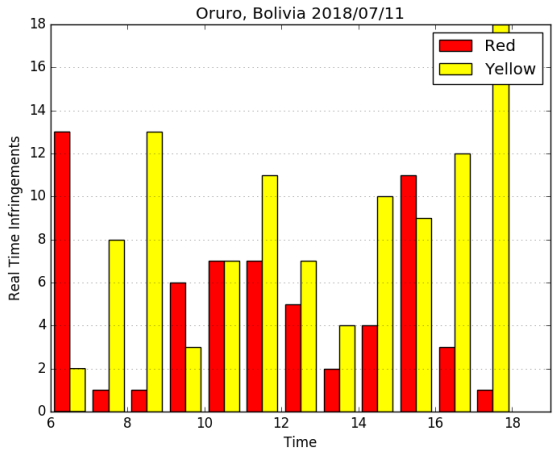

Figure 2. Real time histogram

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Techniques

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Table 1. Table of Grades

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First name	Last Name	Grade
John	Doe	7.5
Richard	Miles	2

Subsubsection

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Word Definition

Concept Explanation

Idea Text

Subsubsection

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- First item in a list
- Second item in a list
- Third item in a list

Subsubsection

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3. Further applications

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