

Ground Truth Generating Tool for traffic video detector

Abstract. The paper presents an application for generating ground truth data for the purposes of video detection and justifies their use in systems which analyze road traffic videos. The usefulness of described application in the development of video detection software is presented - especially during scene configuration and comparative analysis of video detection results versus ground truth data. The latter is possible due to simplicity of the result text files generated in a similar way both by the presented application and by the video detection algorithm. Two example applications of the tool designed to generate ground truth data are presented, together with a discussion of their construction, functionality and abilities.

ZBIGNIEW BUBLINSKI¹, PIOTR PAWLIK¹

¹AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Department of Automatics and Biomedical Engineering {buba,piotrus}@agh.edu.pl

SEGMENTATION OF OBJECTS IN LOG-POLAR SPACE

Abstract. The aim of this work was to develop a simple and fast yet robust algorithm for segmentation of objects in log-polar space. Assuming that some interesting parts of an image are selected by fixation of point of attention, pixels located close to fixation points are transformed to a log-polar space, then edge detection is performed. As a final step, detected edges are processed in a specific manner, which should lead to obtain boundaries of objects. After some smoothing, the detected boundaries are transformed back to a cartesian space and are superimposed on an original image in order to show results of segmentation.

Joanna Grabska-Chrzęstowska *, Przemysław Korohoda **, Zbigniew Pieprzak***

* AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Department of Automatics and Bioengineering, Al. Mickiewicza 30, 30-059 Krakow, Poland

** AGH University of Science and Technology, Faculty of Computing Science, Electronics and Telecommunications, Department of Electronics, Al. Mickiewicza 30, 30-059 Krakow, Poland

*** AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, student of Computer Science, Al. Mickiewicza 30, 30-059 Krakow, Poland

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A comparison of the SVM and Neural Networks in signal and image classification ****

Introduction

Most of the papers that dealt with comparing NN and SVM ended with a conclusion about the

superiority of the relatively new technique of the SVM over the NN. The presented paper negates that thesis and depicts that in each presented example backpropagation neural networks, despite their unquestionable faults, is not worse than the currently fashionable SVM (Support Vector Machine) method and even quite often surpasses it. Neural networks managed quite well with an artificially generated problem representing a wide issue of segmentation of crucial objects from the background. The SVM method behaved unstably and reached an acceptable error level with difficulty. This additionally proves advantage of neural networks. It's hard to think that a set of vectors was too small as 2000 elements were generated, one thousand for each of the two classes. As it is widely known an SVM classifier is unstable on a small-sized training set and SVM's optimal hyperplane may be biased when there are a lot fewer positive feedback samples than the negative ones. Two of the chosen examples had been soundly tested before and the test results had been published just for the neural networks. The earlier work based upon the older versions of the program STATISTICA by StatSoft so a repeated search for optimal networks was performed for the current comparisons using STATISTICA 10 software version. The results for the SVM method were also obtained using the above mentioned STATISTICA 10 software. Moreover, those results were verified in the application performed within the master thesis written by one of the co-authors of this paper. The research was held in the Laboratory of Biocybernetics and Biomedical Engineering.

TOMASZ KRYJAK¹ DAMIAN KROL² MAREK GORGON¹

1 AGH University of Science and Technology, al. Mickiewicza 30, 30-059 Krakow tomasz.kryjak, ago@agh.edu.pl

2 damians.krol@gmail.com

SEGMENTATION OF DISHES FOR THE PURPOSES OF CUSTOMER SERVICE PROCESS AUTOMATION IN A SELF-SERVICE CANTEEN

Abstract. The article describes research on dishes segmentation for the purposes of customer service process automation in a self-service canteen. The project assumptions and a prototype test stand are presented. Also the developed empty workspace detection and tray position determination algorithms are discussed. Finally, the chosen dishes segmentation algorithm is described and justified.

Piotr Pawlik, Zbigniew Bubliński*

* AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Electronics, Department of Automatics and Department of Automatics and Biomedical Engineering, Laboratory of Biocybernetics

Image registration using Exponential Chirp Transform

Abstract. The aim of the article is to check the possibilities of the use of Exponential Chirp transform (ECT) instead of Mellin-Fourier transform (MFT) in areas related to matching patterns problem. In the paper a computational complexity of the algorithm based on ECT in relation to the MFT is estimated. Then the tests for shifted, scaled and rotated images are presented.

JAROMIR PRZYBYŁO¹ MIROSŁAW JABŁONSKI¹

¹AGH University of Science and Technology, Department of Automatics and Bioengineering Mickiewiczza Ave., 30, 30-059 Kraków, Poland
przybylo@agh.edu.pl , mjk@agh.edu.pl

RAY-TRACING-BASED EVENT DETECTION AND 3D VISUALIZATION FOR AUTOMATED VIDEO SURVEILLANCE SYSTEM

Abstract. Automated and intelligent video surveillance systems play important role in current home care and facilities security applications. Among many research problems is graphical visualization of semantic messages to the human operator that he can percept information in more natural way. The other essential research question is how to recognize 3D objects and their state on the monitored scene only from their views (2D images from the camera). In this paper we continue our previous work on data fusion in visualization of 3D scene semantic model and propose to recognize events and states of scene objects under surveillance in an automatic way using feedback provided by the renderer. We developed ray-tracing based visualization for surveillance system, that is capable of recognizing object's state and at the same time present relevant information to the human operator.

Sławomir Mikrut* Agnieszka Moskal*

* {Ph.D., Ph.D student} in Department of Geoinformation, Photogrammetry and Environmental Remote Sensing, AGH Kraków {smikrut, amoskal} @agh.edu.pl

Selected Aspects of Processing Digital Images Obtained From UAVs

Introduction

The paper reviews current issues related to UAV flights. The relevant research has been conducted all over the world for years in various scientific research centres. The paper presents selected aspects of processing digital images made with the UAV technology. This paper provides a comparison between a digital image taken from an airborne height and the one made from an UAV level. Results of research show differences in images prepared with similar pixel sizes. The AGH University of Science and Technology in Kraków - Department of Geoinformatics, Photogrammetry and Environmental Remote Sensing focuses mainly on geometry and radiometry of recorded images. The UAV technology seems to be highly future-oriented due to its low costs as compared to traditional aerial images taken from classical photogrammetry aircrafts.