Keysens

vAlgorithms data types

Technical note

Document title: technical note - *vAlgorithms* data types
Document number: 1004
Version: 01
Date: July 2015

Keysens - Machine Vision
Poligono Ecce Homo nave 4. 12530 Burriana, Spain
info@keysens.com
www.keysens.com

Contents

1 Introduction

Keysens vAlgorithms **are a collection of functions written in C and contained in a DLL. These functions contain machine vision and data processing algorithms.** ***Keysens*** **software like** ***vDevelop*** **and** ***vProcess*** **load several algorithms DLLs and** ***algorithms description files*** **contained in the algorithms directory,** `alg`**.**

For building machine vision applications one makes a project with ***vDevelop*****. Projects consists of several parameters for camera settings and communications with installation devices like robots, PLCs and HMIs, and the most important, an algorithms script, a list of algorithms that will be executed sequentially.**

Every algorithm in the algorithms script uses the previous data from the previous algorithm, does its computations and makes its results available to the next algorithm. So, every algorithm has one conceptual data type as input and one conceptual data type as output. The data type that one algorithm provides as output has to be compatible with the data type the next algorithm needs as input.

2 Conceptual data types

Conceptual data types can be:

Data type	Meaning
NUL	**Not specified data type, can be any data type.**
RAW	**A colour image in a colour space, usually RGB but can be another. It is a three-channels image. If the image is grey-level, it is still a three-channels image with the same information in the three bands, so it appears as a grey-level image.**
LBL	**A labelled image, that is a one-channel image. It contains labels that usually mean object or background, but they can mean anything the developer designs. There are 256 labels, from 0 to 255.**
DAT	**A matrix of real numbers. The size of the matrix, rows and columns, is determined by the algorithm at execution time and may vary at each execution. DAT types are used as detected objects, each row being one object and each column being one object feature (centre x, centre y, area, etc.).**
REG	**A collection of regions, that is, subsets of the image. Regions usually represent neighbour pixels that have characteristics in common, like a similar grey level. From regions many features can be computed, like area, centre, elongation, perimeter, extension, moments, etc.**

Although an algorithms provides only one conceptual data type as output, this result can actually have many data (many lines, for example, in a lines detection algorithm).

3 Compatible data types

When building the algorithms script with *vDevelop* one can insert, delete and substitute algorithms. These operations are allowed only if the output data type of every algorithm is compatible with the input data type of the next one. Besides, when inserting and substituting the program shows a list filled only with the compatible algorithms. `NUL` is compatible with all data types, the remaining data types are only compatible with the same data type.

Data type	Compatible with
NUL	**NUL, RAW, LBL, DAT, REG**
RAW	**RAW**
LBL	**LBL**
DAT	**DAT**
REG	**REG**

4 Comments

If you experience any problems with this document or want to give us feedback, please email us at info@keysens.com.