

Anna Krisanova  
L.I. Tsvirkun, research supervisor  
V.V. Gubkina, language adviser  
SHEI “National Mining University”, Dnipropetrovsk

## **Video Inspection of Loading and Working Conveyor Lines on Coal Mines**

Nowadays band conveyers are used in a great range at most of the mines to transport coal from coalfaces. When conveyers are integrated into the system of transport lines the systems of automation should provide centralized checking of conveyor line feature immediately from the control room. For this purpose it is possible to embed the subsystem of analysis on video pictures, which will afford to oversee loading and working conveyor lines.

The aim of this work is a selection of parameters and structure of the subsystem video analytics. For the automated processing of the data it is proposed to use image recognition algorithm based on the analysis of the contour in the object. Contour analysis allows the main problems of pattern recognition to solve.

To control the loading of the band conveyer it is necessary to perform the following:

- rough-down of image (smoothing, noise filtering, contrast enhancement);
- allocation of fractals;
- determination of areas which are subject to fractals.

Contour analysis has two groups of factors, which have a negative impact on the recognition results.

The first group of factors is related to the problem of extracting contours on images (the object may not have clear boundaries, be of the same brightness and color compared to the background and can be noisy interference, etc.). Therefore, contour is either impossible to be extracted in general or being allocated incorrectly it does not meet the boundary of the objects.

The second group of factors is related to the principles of contour analysis. Contour analysis has poor resistance of noise filtering and can shut out crossings or partial visibility of the object.

By using proposed approach it is possible to create the subsystem of analysis of video pictures for control of loading conveyor lines. As for contour analysis algorithms, they can be applied for creating video in real time and the main features of its use are its simplicity and fast performance in terms of their proper implementation.

### References

1. Image Processing, Analysis, and Machine Vision, M.Sonka, V. Hlavac, R Boyle - 1999 - [css.engineering.uiowa.edu](http://css.engineering.uiowa.edu)
2. Fractal Analysis of Digital Images  
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