



Image processing with discrepancy methods and fuzzy logic

Development Partnership

SONY DADC — UNI SOFTWARE PLUS — FLLL

Since 1994 SONY experts in engineering and quality assurance successfully cooperate with UNI SOFTWARE PLUS (Hagenberg) and the FLLL when checking certain quality parameters of their products or production lines.

The results of two specific joint projects are already being tested and used under production conditions.

Fuzzy Logic

Human experts, after some extensive training, are usually quite successful in deciding upon the quality of complex products or processes. Their judgements, however, often have intrinsic subjective components.

If the computer should assist the human experts in quality control, it is necessary, on one hand, to improve the objectivity of the decisions and to keep, on the other hand, the typical human sensitivity when making such decisions.

In particular *fuzzy logic* with its typical continuous transition from black to white (*grey values*) and its capability of modelling expert knowledge — which quite often is available only in the form of linguistic if . . . then-rules — is a powerful tool to mimic human decision making.

Combination of methods

In order to solve the rather sophisticated and complex problems in engineering and quality assurance at SONY DADC it is quite often necessary to combine modern and powerful methods.

The range of methods available at the FLLL includes

- classical mathematical methods (algebraic, analytical, statistical, . . .)

- image and signal processing (Fourier transform, wavelets, . . .)
- artificial intelligence techniques (fuzzy logic, neural networks, genetic algorithms, machine learning, . . .)

Of course, the main advantages of software techniques such as speed, predictability and precision are fully exploited.

Partners

- SONY DADC Austria AG (Anif)
- UNI SOFTWARE PLUS GmbH (Hagenberg)

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