

Declaration of Intent



Open Source Implementation of 3D – Surface Characterisation Algorithms according to ISO 25178: the Discrete Case

Introduction

The deterministic structuring of surfaces is now becoming widely used in advanced manufacturing and is specifically used to obtain the required functional behaviour of a part. Examples of this structuring include control of the visual appearance of a surface, the interaction of the surface with another medium and the functional behaviour of surfaces in contact with each other.

Advanced branches of industry, for example the automotive industry, manufacture structured surfaces within the scope of engine construction on a large scale, in order to enhance the power density, while at the same time reducing fuel and oil consumption. Comprehensive quality control of these "high-tech" surfaces is currently difficult if not impossible, due to missing appropriate metrological analysis techniques.

ISO/TC 213 is currently drafting the first international standard, ISO 25178, for areal characterisation of surface topography. By application of ISO 25178 it will be possible to describe surfaces with distinctive spatial, deterministic and stochastic structures by geometrical quality control parameters conforming to standards.

Comparability of measurement results using a unified mathematical implementation of ISO 25178

The parameters defined in ISO 25178 are based on a spatially continuous description of surface topography. A computer-compatible, spatially discrete implementation is not part of the standard and allows for different approximations, depending on the accuracy of the approximation of the continuous model.

The international comparability of measurement-results, however, can only be ensured if the mathematical implementation of the parameters is unified. The basis of this unification is composed of "pseudo-code", which is portable into any other high-level programming language and is to be available as open source code. The associated project is called: openGPS®.

The openGPS® community

A community of interested parties comprising measurement instrument manufacturers, national laboratories and university institutes will work towards an open source implementation with the following goals:

- Discrete implementation of 3D surface texture parameters according to ISO 25178 based on "pseudo code"
- Development of software measurement standards to validate the reliability of the implemented software
- XML implementation of ISO 5436, part 2, as a platform independent data exchange format to apply software measurement standards

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We hereby declare our interest to support the openGPS® project to be launched by active collaboration and to realise the formulated goals together with the project partners.

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