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<https://gum.biuro.jskinternet.pl/wye/content/current-volume/6684,Deep-Learning-Applications-for-Surface-Texture-Metrology-A-Project-Progress-Repo.html>
26.10.2026, 13:50

Deep Learning Applications for Surface Texture Metrology: A Project Progress Report

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Authors Dawid Kucharski, Bartosz Gapiński, Michał Wieczorowski (Poznan University of Technology), Adam Gaska (Cracow University of Technology), Tomasz Kowaluk, Marta Repalska, Jan Tomasiak, (Warsaw University of Technology) Krzysztof Stępień (Kielce University of Technology), Michał Nawotka (Central Office of Measures), Piotr Sobecki (Central Office of Measures, National Information Processing Institute), Adam Wójtowicz (Central Office of Measures, Cracow University of Technology)

[Artificial Intelligence](#) [Deep Learning](#) [metrology](#) [Surface Texture](#)

Abstract

The paper provides a progress report on the project "Application of Artificial Intelligence in Surface Irregularities Measurements," funded by the Polish Ministry of Education and Science. The study utilises surface topography measurements from tactile and non-tactile systems to develop AI algorithms for metrology scenarios and predicting surface texture parameters. The deep learning approach achieved 93% accuracy in classifying measurement systems and a regression model with training and validation losses of approximately 9% and 2%. These advancements enhance accuracy, efficiency, and automation in surface characterisation, with potential applications in materials science, manufacturing, and quality control. The findings support AI-driven models as future decision-making tools in measurement preparation.

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ISSN 3071-7647

Language english

Year 2026

Volume 31

Published 2

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