Politecnico di Torino

Finanziato dall'Unione europea NextGenerationEU | Ministero dell'Università e della Ricerca | Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA

ARTIFICIAL INTELLIGENCE

MUR DM 118 - Effective and efficient spatial and spectral super resolution for surface quality monitoring

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] UNIVERSITA' DI MILANO BICOCCA [P.iva/CF:12621570154]
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Context of the research activity	The research is focused on developing advanced image processing techniques for improving the quality of images captured in industrial settings. Progetto finanziato nell'ambito del PNRR – DM 118/2023 - CUP E14D23001820006
Objectives	The research is focused on developing advanced image processing techniques for improving the quality of images captured in industrial settings. The candidate must develop spatial and spectral super-resolution methods that are both effective and efficient, which can be applied to RAW RGB low-resolution images and provide high-resolution hyperspectral images suitable for monitoring and analyzing object surfaces. The developed methods to be used in real-time require both high fidelity and high computational efficiency in terms of the number of operations and memory footprint.
Skills and competencies for the development of the activity	- Strong foundation in color imaging and image processing and analysis, particularly for color images. - Strong foundation in deep learning frameworks and convolutional neural networks: The candidate should be familiar with popular deep learning frameworks (such as TensorFlow, PyTorch, or Keras) and have expertise in designing and training CNNs for imaging tasks. - Programming skills: The candidate should be proficient in at least one programming language, such as MATLAB or Python, to develop and test image processing algorithms.