Spectral colour technology enables accurate colour imaging

In the near future, spectral imaging will provide new solutions for environmental monitoring and industrial quality control. The University of Eastern Finland and Olympus Corporation, a Japanese designer and manufacturer of imaging equipment, have joined forces and are now working on a collaborative research project. The project develops spectral colour technology which makes use of the ultraviolet and infrared spectrums invisible to the human eye.

Traditionally, the colour of an object is described by using the RGB colour model involving three primary colours (i.e. red, green and blue). However, spectral imaging allows the colour of an object to be described in dozens or even hundreds of colours. For instance, the RGB model allows the colours of a rainbow to be measured in percentages of red, green and blue, but the spectral colour technology the UEF and Olympus are developing will allow the identification of hundreds of secondary and tertiary colours in between the blue and red primaries.
"For example, inside a clothes store, a pair of trousers and a jacket may look like they are the same colour, but when taken outside into broad daylight, the colours may look different. By using spectral imaging, the difference in the colour of the jacket and the pair of trousers can be established without going outside. The same technology can be used, for example, to manage colour differences in paint and wallpaper batches in mass production," says the responsible leader of the project, Professor **Markku Hauta-Kasari** of the University of Eastern Finland.

The research project studies the application of spectral imaging and spectral image analysis in, e.g., environmental monitoring and demanding industrial quality control processes.
"In environmental monitoring, our research involves optical measurements carried out in, for example, tree and plant leaves, the soil and water. In industrial quality control, our main focus is on the surface quality of plastic products, and other targets include pharmaceutical products. Having corporate partners in the project ensures that the project serves real industrial needs and observes real industrial operating conditions," Professor Hauta-Kasari explains.

The corporate partners of this international and cross-disciplinary project include Exel Composites Plc., Abloy Ltd. and Phillips-Medisize Ltd. The project has secured €2 million of funding from the Finnish Funding Agency for Technology and Innovation, Tekes.

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