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Quantitative, location-dependent analysis of stray light developed

Our partner Imatest has developed a new complete package for scattered light analysis of cameras, which he presented for the first time at AutoSens in Brussels.

When stray light in vacation photos covers, obscures or discolors parts of the image, it's annoying. But stray light in the camera images that provide information for driver assistance systems in vehicles can disable them, threatening occupant safety. Because of the variety of interfering light sources here - from the low sun to flashing lights to illuminated store windows - this stray light has been difficult to handle because there were no successful established test methods to quantitatively measure scattered light.

Even in production, interfering light can create unwanted glare via reflection and scattering on machine and camera components, which sometimes outshine crucial image information. This complicates automatic image analysis and blinds machine vision. In consumer electronics, disruptive haze or color effects do not pose a danger, but they do reduce user comfort.

Generally, stray light or flares are caused by the scattering of light at interfaces, e.g. in media, on rough surfaces or aerosols, dust, etc.. The causes are so varied that it is hardly possible to eliminate them completely. But in order for modern cameras, with their sometimes extremely high performance requirements, to be able to fulfill their tasks, direct, angle-dependent measurability and analysis of the respective scattered light effects is needed.

Our partner Imatest has therefore developed a new solution to measure and analyze stray light directly. The complete package significantly saves effort compared to current solutions, with a higher accuracy.

A new feature is the combination of motorized gimbal and angle-dependent evaluation of the stray light. The camera is placed in a dark room on a motorized gimbal that can be moved around two axes (azimuth, angle of view). During the measurement process, the camera continuously records images of a permanently installed light source at any angle, even if the camera's field of view is outside the light source. In this way, almost all possible light scenarios can be simulated and measured directly.

The new version 22.2 of the evaluation software from Imatest now offers an analysis of the measurement data in which normalized scattered light images are created from the images. The light source itself is hidden out or masked in the images. The necessary information and analyses can be derived directly from the resulting metric scattered light images.

SphereOptics now offers Imatest's complete package for stray light analysis, consisting of light source, motorized gimbal and evaluation software. Accessories such as optical benches, modular test stands or suspensions for blackout curtains are available on request.

About SphereOptics

Since 2003, SphereOptics GmbH has been offering both special exhibition equipment and a service for a wide range of photonics. This includes the production and calibration of optical materials and standards as well as the distribution of measurement systems for remote sensing and light measurement.

SphereOptics GmbH is ISO 9001 certified and operates a calibration laboratory accredited by DAkkS according to DIN EN/ISO 17025:2018.

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