



4-eye Camera: Method to enhance photographs by transferring texture and contrast to NIR images

MARKET OPPORTUNITY

In a typical outdoor scene, the ratio between the brightest and darkest regions of the scene --- called the dynamic range --- far exceeds what a camera can see. This is true even for professional cameras. There is no single exposure that can capture all the details in the brightest and darkest regions simultaneously. As a result, images omit a lot of scene details. By comparison, the human eye has a much higher dynamic range than a camera, and thus does not suffer from this problem as much.

TECHNOLOGY

The 4-eye camera uses Near-Infrared (NIR) light to augment the usual RGB colors, and is thus able to record more details. In effect, this camera sees in 4 colors ("eyes"), hence its name. By transferring the contrast and high-frequency information from NIR to RGB, this camera produces a single color photo that is visually more pleasing than the original color photo. Image details are enhanced while preserving the relative brightness/darkness of the scene. This software method could be built into the camera itself, or else provided as a software feature.



Figure: 4-eye camera

CATEGORY

Computer Vision

STAGE OF DEVELOPMENT

TRL 6. System/ subsystem model or prototype demonstration in a relevant environment.

APPLICATIONS

To enhance quality of photos taken using amateur as well as professional cameras.

ADVANTAGES

1. Only requires 2 images (near infrared + color photo) taken at the same time.
2. Works with moving objects.
3. Minimum hardware modifications to implement.
4. Fully automatic. No user intervention needed.
5. Adaptive. It handles different scenes, both outdoor and indoor, accordingly.
6. Fast. It takes only a few seconds to a minute to enhance images.
7. Non-machine learning: it does not require training data and is therefore no susceptible to the quality of training data.

STATUS

Patent granted in the US. Available for licensing.

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