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PRESS RELEASE

New imaging world – How pictures learn to think

Imaging industry is an engine for the future with artificial intelligence

Frankfurt Main, March 8, 2018 - Self-driving cars, refrigerators that automatically reorder food, service robots that bring drinks to a human, doors that open with a fingerprint, self-sorting digital image archives – the future promises to be comfortable and exciting. "What is not so obvious is that for all of these scenarios, the imaging industry is the main impulse generator with its innovative technologies of image acquisition and processing", said Christian Müller-Rieker, Executive Director from the Imaging Association (PIV) of the current innovation trends. It has always been cameras - or related devices from the imaging ecosystem - and often AI-based image analysis tools that make this possible. In order to be able to guarantee maximum efficiency, quality, sustainability and safety in all areas of life, the need for seeing and interpreting systems is limitless.

Up to now: automated image processing

Until now, the main focus was on automated image processing, which makes it possible, for example, to detect parking spaces in the Smart City area, or a lack of milk in the refrigerator with Smart Home and even the surface quality of workpieces in industrial production. Image processing is the key technology also for Industry 4.0. Already today such basic technologies are capable of managing recurring uniform tasks well. However, these imageprocessing systems cannot react as flexibly and quickly as a human. More complex scenarios, such as detecting a wanted person on surveillance camera photos, require intelligent systems that have previously been fed a flood of information.

Intelligent, self-learning systems take you to the next level

With "intelligent" and thus artificial intelligence (AI) one imagines self-learning systems. Whereas in the past a program that recognizes faces had to be hard-coded, software today is so flexible that it does it by itself. The basic technology used is the so-called "neural networks". They are as diverse as a Swiss army knife and have brought not only image recognition, but also speech recognition, to a completely new level. Simply said,

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neural networks identify user trial and error in a learning process to identify which operations they need to perform in order to achieve the desired result - similar to humans. When multiple layers of neural networks are used in combination, the results improve significantly. This is called "deep learning".

In order for neural networks to achieve the desired result, they need feedback on the accuracy of their intermediate results and a large amount of data. Ideally, in the beginning, neural networks are fed data already evaluated by humans, e.g. manually indexed images. The more data they have, the better and easier they can identify patterns and the more reliable the results will be. And best of all, as time goes by, they become better because they are constantly learning.

In practice: a variety of possible uses

The German stock photography provider EyeEm has used its large database to develop an application based on artificial intelligence, which automatically suggests keywords for images. Meanwhile, automatic scene detection is standard at the major AI providers in the image processing area of Google, Apple and Microsoft. Thus, for example, only shots of a business meeting can be filtered from a large collection of pictures, just like those of a beach party - without people having to catalog them beforehand.

A key area of AI technologies is facial recognition. Image management programs can offer automatically compiled collections of a specific person based on photos already read. Microsoft even goes as far as trying to detect emotions automatically. For example, it would be possible to find a baby photo with a defiant facial expression for a commemorative photo book for an 18th birthday.

The benefit for consumers

For the end-user, all this adds up to more convenience: time-consuming, rather boring tasks such as indexing are removed and they can make more out of their pictures faster. The possibilities go far beyond a home computer and personal souvenir photos. For example, supermarkets that provide complete self-service without a cash register are possible because they can recognize where the customer is and what he has put in the shopping cart. Science fiction? By no means: Amazon has recently opened a prototype

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called Go Store in Seattle. Even for service-robots that could provide support in nursing, for example, such technologies are important because the robots must recognize the right patient independently and read whether he is satisfied based on his facial expressions.

Outlook for the future: quantum leaps with quantum computers

A current damper on the use of AI technologies is that they consume a comparatively large amount of computing power and are still too slow for many applications. Experts expect the development of quantum computers, which are significantly more powerful than today's computers, to be a quantum leap for artificial intelligence.

photokina 2018

Artificial intelligence (AI) as a tool and solution in the imaging ecosystem context will be one of the central topics at photokina 2018, which opens its doors from 26 to 29 September 2018 in Cologne. Look forward to seeing what the companies will present at the world's leading imaging trade fair.

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About Imaging Association (PIV):

The Imaging Association (PIV), headquartered in Frankfurt am Main, is the central advocacy group for companies that offer their products and services on the market for photo, video, imaging and image communication. The association stands for the topic "image" holistically and sees itself as an impetus for the further development of the entire industry on a national and international level. Since 1950, the association has been the ideal sponsor of photokina in Cologne, the world's leading trade fair for imaging.

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