

# Vision spectra

## WEBINARS

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### A User Guide to Image Quality Assessment for Artificial Intelligence

**Tuesday, November 29, 2022 10:30 AM - 11:30 AM EST**

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#### :: About This Webinar

The size and number of images for image acquisition instruments and processing techniques have grown exponentially, along with the associated storage needs and network requirements. In the fields using large amounts of data, such as life-sciences, automotive or aerospace, most of the images are processed with machine learning techniques that rely on information that is invisible to the eye, but that can be revealed by observing fine correlations between pixels. Therefore, it is important that the raw images follow specific standards. Currently, however, there is a lack of standardized definitions and quality measures for these images. Dotphoton works to address these issues with associations such as [QUAREP-Limi](#) and [ITU AI4Health Group](#).

Dotphoton's Arianne Bercowsky, Ph.D., presents insights into recent work involving standardization and image quality assessment to help future-proof image data. She discusses images properties that are often overlooked, explains raw images from technical and physical perspectives, their main features, and how to evaluate image quality to ensure data-centric artificial intelligence (AI) and machine learning. She also demonstrates Jetraw high-performance raw image compression technology, as a software for biomedical and pharma, followed by her colleague Bruno Sanguinetti, Ph.D. who demonstrates its field-programmable gate array (FPGA) implementation for camera manufacturers. The goal of Jetraw technology is not only to tackle the issues of big data, such as storage space and associated costs, CO2 emissions, and data transfer rates; but also to prepare image data for the era of AI processing in a reliable and scalable manner.

Bercowsky and Sanguinetti are joined by Gerhard Holst, from one of Dotphoton's partners, Exceltias PCO. Holst presents a case study performed by the Imperial College London on the outcome of applying Jetraw compression to light-sheet microscopes using PCO cameras.

#### Who should attend:

Researchers, engineers, and manufacturers who utilize artificial intelligence and machine learning. Lab managers, facility IT managers, clinicians, image analysts, and camera manufacturers who are looking to improve image quality assessment. Those who are interested in or work with light-sheet microscopy, drug development, and research in industries such as medicine, biomedicine, pharmaceuticals, and cancer research.

#### About the presenters:

Arianne Bercowsky, Ph.D., is an application specialist at Dotphoton. She received her doctorate in bioengineering and biotechnology at École Polytechnique Fédérale de Lausanne (EPFL) in the lab of professor Andrew C. Oates. Oates' lab was one of Dotphoton's first clients to integrate Jetraw technology into its image acquisition and processing workflow. The lab's time-lapse data sets were measured in terabytes, which made data handling, storage, and transfer an issue. Oates' lab has reduced data transfer time from two hours per dataset to just 15 minutes, reducing costs and the lab's carbon footprint along the way. Bercowsky saw an immediate need for such technology in biomedical, medical imaging, and machine learning applications, so now she is passionate about helping researchers improve their image data acquisition and processing workflow.

Bruno Sanguinetti, Ph.D. is co-founder of Dotphoton and a Head of Research and Development. After years of academic research in quantum optics, Sanguinetti has dedicated the past 10 years of his career to bringing cutting-edge quantum cryptography and metrology technologies to the market. His expertise extends to processing photonic information algorithms, sensor characterization, image compression, error correction and cryptographic functions. He is a member of the ITU/WHO Focus Group on Artificial Intelligence for Health (FG-AI4H) as part of AI for Good (WHO), working on standardization of AI technology for reliable deployment in real-world applications. He is also a member of the QUAREP-LIMI group, improving assessment and quality control in light-microscopy.

Gerhard Holst, Ph.D. graduated from the Technical University Aachen in Germany in 1991, earning a degree in electrical engineering. He went on to complete his doctorate at the University of Dortmund in collaboration with the Max-Planck-Institute for System physiology in Dortmund, Germany. Holst furthered his research as member of the Microsensor Research Group at the Max-Planck-Institute for Marine Microbiology in Bremen, Germany. From 2001 – 2021 he was head of the research and science department at PCO AG, where he was responsible for new technologies, all research, and sensor projects, such as the development of sCMOS image sensors. Since the acquisition by Exceltias in 2021 he is responsible for ongoing research grants and product manager.

#### About Dotphoton:

Dotphoton is a Swiss software company providing scalable solutions for large image data processing. Its flagship product, Jetraw, is the first raw compression technology perfectly suited for data-centric artificial intelligence (AI) and machine learning. Jetraw is delivered in both software and field-programmable gate array (FPGA) implementation and improves large data-set management for optical system manufacturers and for their end users. Dotphoton's metrologically correct compression enables file size reduction, speeding up data transmission by at least 4x, and equally reducing storage costs and the carbon footprint. This allows companies to meet performance and environmental goals without sacrificing data quality. Dotphoton's partners and clients include the European Space Agency, Bosch, leading life-science camera manufacturers, and biomedical labs

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