IS&T International Symposium on

Electronic Imaging 2018

SCIENCE AND TECHNOLOGY

Where Industry and Academia Meet

28 January – 2 February 2018
Hyatt San Francisco Airport, CA

Join us

EI21: RESOLUTION IN IMAGING DEVICES: CONCEPTS AND MEASUREMENTS

Instructors: Uwe Artmann, Image Engineering GmbH & Co KG (Germany), and Kevin Matherson, Microsoft Corporation (US)

Sunday January 28, 10:15 AM – 12:15 PM | **Course Level:** Introductory/Intermediate | **Fee:** Member: $175 / Non-member: $200 / Student: $65

(*prices for all increase by $50 after January 8, 2018)

Resolution is often used to describe image quality of electronic imaging systems. Components of an imaging system such as lenses, sensors, and image processing impact the overall resolution and image quality achieved in devices such as digital and mobile phone cameras. While image processing can in some cases improve the resolution of an electronic camera, it can also introduce artifacts as well. This course is an overview of spatial resolution methods used to evaluate electronic imaging devices and the impact of image processing on the final system resolution. The course covers the basics of resolution and impacts of image processing, international standards used for the evaluation of spatial resolution, and practical aspects of measuring resolution in electronic imaging devices such as target choice, lighting, sensor resolution, and proper measurement techniques.

Benefits:

- Understand terminology used to describe resolution of electronic imaging devices.
- Describe the basic methods of measuring resolution in electronic imaging devices and their pros and cons.
- Understand point spread function and modulation transfer function.
- Learn slanted edge spatial frequency response (SFR).
- Learn Siemens Star SFR.
- Contrast transfer function.
- Difference between and use of object space and image space resolution.
- Describe the impact of image processing functions on spatial resolution.
- Understand practical issues associated with resolution measurements.
- Understand targets, lighting, and measurement set up.
- Learn measurement of lens resolution and sensor resolution.
- Appreciate RAW vs. processed image resolution measurements.
- Learn cascade properties of resolution measurements.
- Understand measurement of camera resolution.
- Understand the practical considerations when measuring real lenses.
- Specifying center versus corner resolution.
- Learn about impact of actuator tilt.
- Learn about impact of field curvature.
- Understand through-focus MTF.

Intended Audience: Managers, engineers, and technicians involved in the design and evaluation of image quality of digital cameras, mobile cameras, video cameras, and scanners would benefit from participation. Technical staff of manufacturers, managers of digital imaging projects, as well as journalists and students studying image technology are among the intended audience.

Instructors: **Kevin J. Matherson** is a director of optical engineering at Microsoft Corporation working on advanced optical technologies for consumer products. Prior to Microsoft, he participated in the design and development of compact cameras at HP and has more than 15 years of experience developing miniature cameras for consumer products.

Uwe Artmann studied photo technology at the University of Applied Sciences in Cologne following an apprenticeship as a photographer and finished with the German 'Diploma Engineer'. He is now the CTO at Image Engineering, an independent test lab for imaging devices and manufacturer of all kinds of test equipment for these devices.

SYMPOSIUM PLENARY TALKS

Monday: Overview of Modern Machine Learning and Deep Neural Networks – Impact on Imaging and the Field of Computer Vision, **Greg Corrado, co-founder of Google Brain and Principal Scientist at Google**

Tuesday: Fast, Automated 3D Modeling of Buildings and Other GPS Denied Environments, **Avideh Zahkor, Qualcomm Chair & Professor at UC Berkeley**

Wednesday: Ubiquitous, Consumer AR Systems to Supplant Smartphones, **Ronald T. Azuma, Intel Labs Researcher and Augmented Reality Pioneer**

SYMPOSIUM HIGHLIGHTS

- 18 conferences featuring 30 keynote talks by world reknown experts
- 3D Theatre
- Tours of Stanford University Labs
- Industry Exhibition
- Meet the Future: Showcase of Student and Young Professional Research
- Demonstration Session
- Poster Session
- Welcome Reception
- Women in Electronic Imaging Breakfast
- Human Vision in Electronic Imaging 30th Year Banquet

To register or learn more, visit
www.ElectronicImaging.org

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Information confirmed as of 12/06/17