IS&T International Symposium on

Electronic Imaging 2018
SCIENCE AND TECHNOLOGY

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

Where Industry and Academia Meet

Join us

EI07: DIGITAL CAMERA IMAGE QUALITY TUNING

Instructor: Luke Cui, Amazon (US) | **Sunday January 28**, 8:00 AM – 12:15 PM | **Course Level:** Introductory/Intermediate

Fee: Member: $275/ Non-member: $300 / Student: $95 (*prices for all increase by $50 after January 8, 2018)

A critical step in developing a digital camera product is image quality tuning – a process to balance and set camera operating parameters that generate the best raw images, hide defects inherent to each camera technology, and make the images appear to be most pleasing. Image quality tuning is complex and full of pitfalls but yet directly impacts the competitiveness of the product and customer satisfaction. The course covers the complete engineering process as well as fundamental science and techniques with practical examples including 1) 3A tuning; 2) objective image quality tuning; 3) subjective image quality tuning; 4) image quality evaluation and competitive benchmarking; and 5) nuts and bolts in managing the process.

Benefits:
- Understand the camera image quality tuning goals.
- Understand the hardware capabilities and limitation based on specifications and testing.
- Understand the features, capabilities, limitations, and turnabilities of the image processing pipelines.
- Deep dive into the tuning process and workflow.
- Explore 3A models, the tuning processes, metrics, and testing.
- Deep dive into various ISP modules and image processing techniques.
- Learn about camera module variations and camera per module factory calibration.
- Understand subjective image quality and competitive benchmarking for tuning.
- Discuss new trends in digital camera image quality performance.
- Image quality review of top three cellphone cameras of the year.

Intended Audience: Engineers, scientists, and program managers involved with digital camera development.

Instructor: **Luke Cui** has been hands-on working on imaging systems for more than twenty-five years with a BS in optics, MS in color science and PhD in human vision. He has been involved with the delivery of numerous market-proven digital imaging systems, working from photons, lenses, sensors, cameras, color science, imaging processing, image quality evaluation systems, to psychophysics and human vision. He has more than sixty patents and patent applications. He has worked for Macbeth Co. on standard lighting, color formulation, spectrophotometry, and colorimetry, led high speed document scanner optical imaging system development at Lexmark International, working from lens design to final image pipeline tuning, and led camera tuning of most Surface products on the market at Microsoft, covering from system specification, ISP evaluation, selection, and all phases of camera tuning. Currently he is with PrimeAir at Amazon.

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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