WKS-7 Computational Photography Techniques for Historical Sites and Artifacts

Instructors: Carla Schroer and Mark Mudge, Cultural Heritage Imaging,
less than Half-day: 1:00 p.m. – 3:30 p.m.
Maximum enrollment: 30
Cost: $25 for SHA members, $30 for nonmembers, $15 for SHA student members, and $20 for student nonmembers

Through lectures, demonstrations, and discussion, this workshop provides a condensed overview of computational photography and its application to cultural heritage. Computational Photography extracts and synthesizes information from image sequences to create a new image containing information not found in any single image in the sequence. This workshop offers an intensive introduction to the technologies, software, photographic equipment, and methods for reflectance transformation imaging (RTI), and photogrammetry.

RTI creates scientific digital representations of an imaging subject's shape and color. These digital representations are generated from image sequences where the light illuminating the photo's subject is moved to a new location for each photograph. The lighting information from this image sequence is mathematically synthesized into an RTI image.

Photogrammetry refers to the practice of deriving 3D measurements from photographs. It can be used for documenting 3D subjects, monitoring changes to these subjects over time, and a wide range of other uses. Photogrammetry, when done correctly, creates accurate and measurable 3D models on a wide range of scales. We also explore how these photographic data sets and the digital representations they produce can be archived and confidently reused by others both now and in the future. The workshop will also describe new open source tools for the recording and archiving of photogrammetry and RTI contextual and process metadata using the Digital Lab Notebook (DLN).

Carla Schroer is a co-founder and director of Cultural Heritage Imaging (CHI) a non-profit corporation that develops and implements new imaging technologies for cultural, historic and artistic heritage and scientific research. Cultural Heritage Imaging (culturalheritageimaging.org) has been active in the cultural heritage computational photography research community since 2002. Carla leads the training programs at CHI, along with working on field capture projects with Reflectance Transformation Imaging and photogrammetry. She also leads CHI's software development activities. She spent 20 years in the commercial software industry, managing and directing a wide range of software development projects.

Mark Mudge is President and co-founder of Cultural Heritage Imaging. He has been involved in photography and 3D imaging for more than 30 years. He is a co-inventor, with Tom Malzbender, of the computational photography technique, Highlight Reflectance Transformation Imaging. He has published 14 articles and book chapters related to scientific imaging of cultural heritage material and its long-term preservation. He serves on several international committees, including The International Council of Museums' (ICOM) Documentation Committee (CIDOC).