

Nieves Gruneiro-Roadcap
Associate Professor, Art & Design
Chair, Art & Design Department

Activities Attended and Value of Conference Statement
Experimental Capture Workshop - Anderson Ranch
Snowmass, CO
August 13-17, 2018

The Experimental Capture Workshop was taught by Mr. Golan Levin, Associate Professor of computation arts at Carnegie Mellon University. Full description and details follow below:

Concept:

Challenge conventional image capture and expand your skill set with innovative new techniques in this exciting workshop. Obtain direct hands-on experience with a wide range of unusual devices for acquiring information about the world, including panoramic and hyperspectral imagers, depth sensors, 3-D scanners, photogrammetry, motion capture systems such as face-trackers, hand-trackers and eye-trackers, binaural audio, and more. Through these explorations, we seek the visual cues of exotic, forgotten and nascent image capture technologies.

Media & Techniques:

Students obtain direct hands-on experience with a wide range of unusual devices for acquiring information about the world, including: thermal (FLIR), infrared and ultraviolet cameras; depth sensors (Kinect); high-resolution light field cameras (Lytro); LI-DAR sensors and a variety of 3D scanners, panoramic and 360-degree imagers; timelapse video and ultra high-speed videography; practical photogrammetry with DepthKit, Skanect, Agisoft Photoscan, and iSense software; and motion capture systems for the face, hands, eyes and body with tools like Brekel, Leap, EyeTribe and Kinect.

Activities:

We capture a wide range of people, places, things, gestures and events, with an eye toward how the above tools can be used to create new forms of portraiture, narratives and interactive environments. We learn how to calibrate cameras together in order to fuse data from multiple sources.

During the week long workshop, I focused on capturing and learning photogrammetric capture. Photogrammetry skills will be used in both the Photo Tech and Virtual Reality curriculums. 3D high resolution capture is used for commercial photographic applications such as capturing products for websites and ecommerce, architectural and manufacturing renderings, real estate showcases and walk throughs. 3D high resolution capture is also widely used to create immersive and realistic environments in virtual, mixed and augmented platforms. I also had the opportunity to use and test a variety of software related to photogrammetric capture. This helped tremendously in evaluating the range of software and examine software costs v. workflow pipelines and learning curve needed to master the different software programs available.

A highlight of the week long workshop was the opportunity to use cutting edge volumetric capture technology. This type of image capture is capable of translating data into point clouds, depth data and a variety of color data. All these different types of data can then be computationally restructured (or combined) to create immersive, multi-dimensional environments. I also got the opportunity to connect tracking (hand and eye) sensors with Unity 3D, creating live, responsive virtual environments. An added bonus to the opportunity to beta

test DepthKit. DepthKit has been a leader in volumetric capture. The company is currently overhauling the software before releasing it for commercial and education licensing. Using the software and providing feedback regarding the beta was a great opportunity to provide input the interface and proposed workflow.

Mr. Golan also demonstrated a wide range of spectral devices: lidar, ultra highspeed cameras, thermal, and full body 3D scanners. As a group, we choose subjects to film and had the opportunity to learn and apply new techniques to future projects.