

**GPU Technology Conference, May 14-17, 2012**  
**McEnergy Convention Center, San Jose, California**  
[www.gputechconf.com](http://www.gputechconf.com)

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## Sessions on **Computational Photography** (subject to change)

**IMPORTANT:** Visit <http://www.gputechconf.com/page/sessions.html> for the most up-to-date schedule.

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### **S0526 - Tools for Mobile Computational Photography**

**Alejandro Troccoli (NVIDIA)**

**Day:** Tuesday, 05/15 | **Time:** 4:00 pm - 4:50 pm

**Session Level:** Intermediate

**Topic Areas:** Computational Photography

This session will talk about advances in Mobile Computational Photography and the tools that NVIDIA is putting together to enable these on Tegra powered devices. It will demonstrate the use of FCam, an Application Programming Interface (API) that allows for easy and precise control of the camera system. In addition, the FCam API can enable the application developer to replace basic camera routines such as metering, which are typically hidden inside black boxes in traditional camera programming models.

### **S0335 - Live 3D-Video with a Lightfield Camera**

**Christian Perwass (Raytrix GmbH)**

**Day:** Wednesday, 05/16 | **Time:** 2:00 pm - 2:50 pm

**Topic Areas:** Computational Photography; Audio, Image and Video Processing; Stereoscopic 3D; Computer Vision

**Session Level:** Beginner

In this session you will learn what a lightfield camera is, how it works and what you can do with it. Next to the theoretical presentation we give a live demo of the camera system developed by our company Raytrix that gives you 3D live video from a single camera through a single lens currently at up to 10fps with a maximum effective resolution of 3 megapixels synthesized from an 11 megapixel sensor using CUDA algorithms on a GTX580. Post-production features include pixel-wise focusing, depth zoom, variable stereo base-line and base-line rotation.

### **S0281 - Accelerate a Fully Functional Photo Editing Software with GPU**

**Kaiyong Zhao (Hong Kong Baptist University)**

**Day:** Wednesday, 05/16 | **Time:** 3:00 pm - 3:25 pm

**Topic Areas:** Computational Photography; Computer Graphics

**Session Level:** Beginner

Introduce how to design a fully functional GPU-based photo editing software, which provides features like layering and selecting, and integrates various adjusting tools and image filters. This design contains a fast layer rendering engine, an image filter framework which manages different filters supporting visual feedback for filter parameter adjustment. We will also introduce how to design undoing system for GPU-based image processing software. Specifically a CUDA-accelerated HDR tool will be presented in detailed.

**S0128 - VScreen: a Real-Time Augmented Video Method**

**Francisco J. Hernandez-Lopez (CIMAT A.C.), Mariano Rivera (CIMAT A.C.)**

**Day:** Wednesday, 05/16 | **Time:** 5:00 pm - 5:25 pm

**Topic Areas:** Computer Vision; Audio, Image and Video Processing; Computational Photography

**Session Level:** Beginner

We are presenting a tool for image editing that allows us to modify a region of any image or video by another image or video. This application is useful for advertisements, commercials, music videos, movies, etc. We named "Virtual Screen", or just VScreen, to our development. The main difference between editing (augmenting) videos and fixed images is that the occlusions need be managed. Moving objects in the foreground may occlude the augmented region in background. So that we use a procedure for foreground-background video segmentation, that is implemented in NVIDIA video cards to fulfill the real-time requirement.