

AbstractID: 4892 Title: Labview Graphical User Interface for Micro Angio-Fluoroscopic High Resolution Detector.

Purpose: A graphical user interface based on LabView software was developed to control a Micro Angio-Fluoroscopic detector (MAF) for real-time acquisition, display and rapid frame transfer of high resolution images of a region-of-interest.

Method and Materials: A MAF detector was built by our group using a CsI(Tl) phosphor, fiber-optic taper and Light Amplifier optically coupled to a progressive scan charged coupled device (CCD) camera which provides real-time 12 bit, 1k x 1k images. During image acquisition, the MAF detector is inserted in the x-ray beam of an angiographic unit, between the x-ray image intensifier and the patient. Images can be captured in continuous or triggered mode and the camera can be programmed by a computer using the serial communication. A graphical user interface was developed to control the camera modes such as gain and pixel binning as well as to acquire, store, display, and process the images.

Results: The program, written in LabView, has the following capabilities: camera initialization, synchronized image acquisition with the x-ray pulses, flat field correction, window and level adjustment, brightness and contrast control, and looped play-back of the acquired images. Acquisition starts when the first triggering pulse is read by the interface. The acquired sequence of images is automatically displayed in a loop after completion of acquisition and the images can be stored or deleted at the user's discretion. Frame rates can be up to 30fps in 2x2 binning mode and 25fps unbinning.

Conclusion: The user friendly implementation of the interface along with the high frame rate acquisition and display for this unique high resolution detector may provide angiographers a new capability for visualizing details of small endovascular devices such as stents and hence enable more accurate image guided localization.

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