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Virtual Crime Scene Reconstruction Laboratory

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Virtual Crime Scene Reconstruction Laboratory

Interim Report for Thinkfinity Grant

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We received funding in the form of a Thinkfinity grant for acquiring both hardware and software to research and develop a virtual representation of crime scene. The project consists of using digital SLR cameras (in our case a Nikon D300) with a fish eye lens for taking high resolution pictures of the crime scene and use of software for stitching the images together into a 360 degree panorama.

The software we were interested in for this use is called the CSVT Suite (Crime Scene Virtual Tour), which has programs that both stitch the panoramas as well as import them into a 3-D visualization application for any PC computer. The research was delayed by two months as we waited for the software to ship. It was coming from China and ordering and shipping took longer than necessary.

The graduate student conducting the research, Eric Sorrentino, was trained and has practiced using the software. All preliminary training was based on the help tutorial of the program. Further training was achieved through direct use of the equipment and the software programs. Research in this project involves taking controlled pictures of a specific area and using the CSVT program for stitching. Then the same pictures are stitched using the AutoPano program and the resulting panoramas are analyzed to see which gave a better overall 3-D representation. Eric is also researching the 3D measurement aspect of the CSVT software to find out exactly how accurate it is. It involves taking two panoramas of the same room but at different heights and through a triangulation method coming up with measurements of various objects.

The CSVT software will be involved in teaching criminalistic classes at Pace in the Forensic Science Department. Scheduled experiments are being made for the Crime Scene Processing (undergraduate, Fall 2009) and Crime Scene Reconstruction (graduate, Spring 2010) classes for students to begin learning about this software and its large impact on forensic science.

This software has a huge impact on forensic science as the CSVT software has the potential to accurately preserve a crime scene for an infinite amount of time. The software does not make a 3D image based off the pictures taken but uses the panoramas and doesn't

alter the images at all. This allows for its use in investigations as well as in courtroom testimony so the jurors can be taken on a 'tour' of the crime scene as the program can also mark POI's (points of interest) that are clickable and can lead to various other things in the investigation.

Eric Sorrentino is currently training a second graduate student to conduct research using the CSVT software. Determining the full scope of the software's capabilities will let us know the shortcomings being faced and be able to eventually develop more software to help fix those.

The NYPD Crime Laboratory as well the OCME (Office of the Chief Medical Examiner) have expressed interest in our project. By expanding the capabilities of this approach we can further strengthen our ties to these large forensic laboratories and have our students trained using the latest technology that crime laboratories are in the need for.