Digital Rejuvenation of Vincent van Gogh Drawings

Dr. Roy Berns, RIT’s Richard S. Hunter Professor in Color Science and Technology and Graduate Coordinator for the M.S. Color Science program, has been collaborating with the Van Gogh Museum in Amsterdam to simulate the appearance of several Van Gogh drawings whose paper support has faded and oxidized turning its color from blue to straw. The museum has several sheets of the actual paper that has not changed in color. By measuring the spectral properties of the aged and un-aged papers, images of these drawings were simulated to give a sense of their original appearance. Below is an example, a drawing of Boulevard Clichy in the Montmartre section of Paris, where Vincent lived with his brother beginning in 1886. (A photograph of the street can be seen at the museum website.)

Dr. Berns used the same techniques he developed in digitally rejuvenating Seurat’s La Grande Jatte. Similar drawings will form an upcoming exhibition at the Metropolitan Museum of Art, beginning in October. To learn more, visit: www.mcsl.rit.edu/people/faculty/berns/research.html

Color Science Graduate Employed In Holland

As a color science graduate student, I really enjoyed the display side of color science and was very thrilled with my research topic. It was a mix of color and imaging science and it dealt with a current problem that companies are experiencing. I was researching human sensitivity to motion blur and preferred transfer functions of LCTVs in different surround conditions.

Liquid crystal televisions (LCTVs) are becoming quite popular because they hold several advantages over their counterparts, such as sharper images and the ability to achieve higher luminance levels than other traditional displays. However, differences between LCD technology and the previously dominant CRT raise some questions. The research carried out for my thesis was divided into two parts. One part of the research was concerned with human sensitivity to motion on LCTVs since it is known that there are weaknesses inherent in LCDs such as motion blur. Reported in my thesis is fundamental research targeted at learning about human sensitivity to blur for objects in motion. The second part of my research involved a study of the preferred tone response curve of these LCTVs in a dark and dim surround. Because recent commercial LCTVs are larger and brighter than traditional televisions, viewing conditions may require different electro-optical transfer functions (EOTFs).

The knowledge and experience I gained through my research was one of the primary reasons for my job offer. I will begin working at Philips Research October 2005 doing research in color perception. I’ll be moving to Eindhoven, Holland where all their research is performed. I’ll be part of their display group and working on gamut mapping extension algorithms and high dynamic range displays.

Through this program I was introduced to the science of color and I later discovered the Munsell lab also at RIT. I decided that an opportunity to study color at the lab was something I should not miss. I have never regretted that decision.

- Justin Laird, MCSL Graduate Student

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Ask A Color Scientist?

“Ask a Color Scientist”, an Internet-based message board, allows anyone with a color-related question to connect with scientists and researchers at RIT’s Munsell Color Science Laboratory. Professors provide detailed responses and offer additional material for further study. The message board is already fielding questions from students, teachers and research scientists from around the world.

“It has been very challenging and rewarding to answer these questions as they come in,” says Dr. Mark Fairchild, director of the laboratory, in RIT’s Chester F. Carlson Center for Imaging Science. “In particular, the queries that stump me for a while are the most fun. It is also great to receive all the thank you notes from people who have truly been helped by the answers, especially the younger children working on school science projects.”

The “Ask a Color Scientist” project was inspired by RIT President Albert Simone’s “Ask the President” webpage and is already serving as a model for other academic programs throughout the university. In addition, Dr. Fairchild is developing a parallel educational program called the Color Curiosity Shop, which will present scientific principals and theories in fun and entertaining ways to area school children.

The Munsell Color Science Laboratory, founded in 1983, was one of the first research institutes in the world devoted to the study of color science. The lab remains at the cutting edge of the field and is currently developing a doctoral program in color science.

To view the “Ask a Color Scientist” site, go to the Color Science homepage at: www.mcsl.rit.edu

Benchmarking Digital Archiving for Museums

Scientists from RIT have discovered a wide range of quality in the digital images being produced by American museums, libraries, and other cultural-heritage institutions and unfamiliarity with scientific protocol in the use of digital photography and color management.

Dr. Roy Berns, the R. S. Hunter Professor in Color Science, Appearance and Technology, and Franziska Frey, assistant professor in the School of Print Media, led a two-year study that included a comprehensive survey of museum practices, a detailed scientific evaluation of digital practices at several institutions and the development of a national conference to discuss the state of digital imaging and roadblocks to move forward. Their study provides new insight into the use and quality of digital imaging by American museums to catalogue and market their collections.

“Digital imagery is increasingly becoming the main medium for accessing American artwork,” Berns says.

“These digital surrogates are used by scholars and students, alike, beginning in childhood. Our goal is to help create imagery of the highest possible quality”.

“Throughout the project, we worked closely with the photographers in cultural heritage institutions,” Frey says. “This approach ensured that we were clear on the tasks facing the image creators. In a future step it will also make it easier to help implement new workflows that take full advantage of what digital photography has to offer”.

Berns and Frey’s study was principally funded by the Andrew W. Mellon Foundation. They are planning to use their findings to push the quality in digital image production to a higher level through creating and promoting measurable tests and stricter protocols for image capture. A complete list of key findings and future research initiatives are attached to this release. You may also access the full report at: http://www.cis.rit.edu/museumSurvey/.