COSC FACULTY CANDIDATE 2010 SEMINAR

SPEAKER: Dr. Sam Hasinoff, Massachusetts Institute of Technology
DATE: MARCH 8, 2010
TIME: 11:00 AM
WHERE: PGH 232

TITLE: Rich Photography on a Budget

Computation is playing an increasingly central role in how we capture and process our images, opening up richer forms of imaging that go beyond conventional photography. Recent examples of rich photography involve merging multiple shots to obtain seamless panoramas, 3D shape, deeper focus, or a wider range of tones. In this talk, I will argue that the future of photography lies in richer capture, paying special attention to our limited budget of light, time, and sensor throughput.
By analyzing tradeoffs and limits in imaging, we can develop ways to enrich photography while making efficient use of our cameras.

First, I will address the basic problem of capturing an in-focus image in a fixed time budget. As our analysis shows, the number of shots captured is a crucial determinant of quality, and taking this into account places the conventional camera in a surprisingly favorable light. Second, I will describe how existing cameras can be used more efficiently to capture scenes with a wide range of tones. By adjusting the camera's amplifier as well as its shutter speed, we can achieve up to 10x noise reduction in the darkest parts of the scene. Both of these projects demonstrate not only how computation enables rich photography, but also how a deeper understanding of imaging can lead to significant gains over the state-of-the-art.

Bio:
Sam Hasinoff received the BSc degree in computer science from the University of British Columbia in 2000, and the MSc and PhD degrees in computer science from the University of Toronto in 2002 and 2008, respectively. He is currently an NSERC Postdoctoral Fellow at the Massachusetts Institute of Technology. In 2006, he received an honorable mention for the Longuet-Higgins Best Paper Award at the European Conference on Computer Vision. He is the recipient of the Alain Fournier Award for the top Canadian dissertation in computer graphics in 2008.