Addy Ngan

CONTACT
INFORMATION

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Ph.D. in Computer Science, expected August 2006

- Dissertation: Acquisition and Modeling of Material Appearance
- Advisor: Frédo Durand

S.M. in Computer Science, June 2003

Princeton University, Princeton, NJ

B.S.E. in Computer Science, *summa cum laude*, June 2001

EXPERIENCE
SUMMARY

Extensive experience with computer graphics research, hardware design and construction for 3D imaging, development and implementation of new algorithms

RESEARCH/
TEACHING
EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA

Research Assistant   September 2001 - present

- Built and designed measurement system and reconstruction algorithm for efficient acquisition of material visual appearance based on the 6D Bidirectional Texture Function, attaining high-quality results with significant reduction in measurement time and setup cost compared to previous work.

- Introduced and implemented algorithm to estimate microgeometry of materials from reflectance measurements, providing a faithful representation of complex reflectance which is difficult for previous analytic techniques.

- Devised computational metric to define material reflectance in a perceptually uniform space, and implemented a user interface allowing intuitive visual navigation of the parameter space.

- Constructed an image-based 3D scanning system which acquires geometry and photorealistic appearance simultaneously, allowing capture of fuzzy, specular or refractive objects, all of which are difficult for common scanning techniques. (3 patents granted)

- Supervised three undergraduate students in semester-long research and software development projects.

Teaching Assistant   September 2002 - December 2002

- Served as teaching assistant in a computer graphics class of about 40 students, responsible for tutorials, lab assistance and final projects supervision.

Princeton University, Princeton, NJ

Undergraduate Research   September 1999 - June 2001

- Prototyped 3D modeling system based on freehand drawing, facilitating easy creation of 3D models of higher complexity than possible with previous work.

- Involved in the implementation of a real-time acoustic simulation system that handles diffractions using beam-tracing techniques, providing realistic audio in an interactive virtual environment.

INDUSTRY EXPERIENCE	**Mitsubishi Electrical Research Laboratory**, Cambridge, MA

Consultant   August 2003 - October 2003

Research Intern   May 2002 - August 2002

- Independently designed prototype of a fast 3D geometry and reflectance scanner for a multi-year project in human face scanning. Assisted in the engineering design and specification of the final scanner in the role of consultant, culminated in the contractor construction of a room-sized dome with 15 cameras and 150 light sources, the first device in the field capable of full acquisition of face reflectance in 15 seconds.

Hang Seng Bank, Hong Kong

Software Engineer   May 1998 - August 1998

- Designed and implemented Project Management System, a multi-user application that gathers and analyzes project progress, and generates accounting information for auditing purpose.

SELECTED PUBLICATIONS

T. Weyrich, B. Bickel, W. Matusik, H. Pfister, C. Donner, C. Tu, J. McAndless, A. Ngan, H. Wann Jensen, M. Gross. Analysis of Human Faces using a Measurement-Based Skin Reflectance Model. *To appear*, SIGGRAPH 2006.

A. Ngan and F. Durand. Statistical Acquisition of Texture Appearance. *To appear*, Eurographics Symposium on Rendering 2006.

A. Ngan, F. Durand, W. Matusik. Image-driven Navigation of Analytical BRDF Models. *To appear*, Eurographics Symposium on Rendering 2006.

A. Ngan, F. Durand, W. Matusik. Experimental Analysis of BRDF Models. In Proceedings of Eurographics Symposium on Rendering 2005.

W. Matusik, H. Pfister, A. Ngan, P. Beardsley, R. Ziegler, L. McMillan. Image-based 3D Photography using Opacity Hulls. In Proceedings of SIGGRAPH 2002.

HONORS AND AWARDS

Andersen Consulting Prize in computer science, Princeton University, 2001 (awarded to three graduates for outstanding achievement in the field of computer science)

President Awards for Academic Achievement, Princeton University, 1997,1998

Hang Seng Scholarship (full funding for four years of undergraduate study)

Member of Phi Beta Kappa, Sigma Xi, Tau Beta Pi

SERVICE

Reviewer for SIGGRAPH, EUROGRAPHICS, Graphics Interface, International Symposium on Non-Photorealistic Animation and Rendering, IEEE Transactions on Visualization and Computer Graphics

SKILLS

C/C++, MATLAB, OpenGL, Qt, Image/Video Processing.