

**FACULTY OF ENGINEERING
ADDITIONAL CONTRIBUTIONS**

Name:	Dr. Bruce Gooch
Department:	Computer Science
Purpose of Review:	Promotion to Associate Professor
Period of Review:	September 2003 – September 2008

Dr. Bruce Gooch, Computer Science: Other Contributions

Administrative Positions and Committees

In addition departmental committees (Equity 2006 – 2007, Combined Programs 2007) Dr. Gooch serves on the Engineering Mentoring committee and was part of the team that drafted the Engineering Mentoring Plan for the University of Victoria.

The University of Victoria's Computer Science program, and Engineering in General, have high undergraduate attrition rates. Dr. Gooch served as a member of the team that conducted the first every survey of why students leave our programs. Using the information found in the survey Dr. Gooch has several innovative programs to retain undergraduate students. Among these are the undergraduate research team and the research teams: fundamentals and management course.

Dr. Gooch is an active research collaborator with the video game industry in British Columbia, a 3.3 billion dollar business. In response to the high demand for highly trained personal in the computer graphics and computer games industries Professor Gooch has co-created a new undergraduate degree option in Computer Graphics and Games. Dr. Gooch designed, taught and assessed the game courses during 2007–2008. The new option includes new courses approved by the faculty for the 2008–2009 and 2009–2010 calendar years:

Courses created by Dr. Gooch and approved for the 2008–2009 calendar:

- CSC 167: Computer Games Strategy and Design
- CSC 299: Research Experience for Undergraduates

Courses co-created by Dr. Gooch and approved for the 2009–2010 calendar:

- CSC 205: 2D Computer Graphics and Image Processing
- CSC 471: Fundamentals of Computer Rendering
- CSC 472: Fundamentals of Computer Modeling
- CSC 473: Fundamentals of Computer Animation
- CSC 486: Special Topics in Computer Graphics

Retention Program: The Undergraduate Research Team (UGRT)

Computer science departments across North America suffer from low retention rates. Undergraduate students cite two main reasons for leaving the major: the failure to establish social networks and the failure to become academically involved in classes. However, students who work together on projects and course work are better able to form social networks, are more likely to be actively involved in the academic community, and, hopefully, will be more likely to graduate from computer science departments.

A primary goal of the Undergraduate Research Team is to provide research experiences for undergraduates. Undergraduates in small research teams led by graduate students or advanced undergraduate students receive practical experience in the field while gaining mentoring and leadership skills. As team leaders, these students act as catalysts for the peer-centered learning experience by interacting one-on-one and in small group settings with novice and intermediate students.

Former Members of the UGRT:

1. Greg Coombe Ph.D. Candidate, The University of North Carolina at Chapel Hill
NVIDIA International Graduate Fellowship 2003 and 2004
2. Amy Williams Ph.D. Candidate, Massachusetts Institute of Technology
NSF Graduate Research Fellowship
3. Claurissa Tuttle Ph.D. Candidate, University of Utah
NSF Graduate Research Fellowship
4. Brian Budge Ph.D. Candidate, The University of California at Davis
5. Rachel Gold Ph.D. Candidate, Brown University
6. Aaron Johnson Ph.D. Candidate, Yale University
7. David Feng Ph.D. Candidate, The University of North Carolina at Chapel Hill
8. Andrew Kaufmann Ph.D. Candidate, The University of British Columbia
9. Brian Cornell Ph.D. Candidate, The University of North Carolina at Chapel Hill, Google
10. Rebecca Flannery M.S., Texas A&M, Electronic Arts
11. Nathan Beddes M.S., The University of North Carolina at Chapel Hill
12. Samir Nayak M.S., The University of North Carolina at Chapel Hill, Disney Games

Professional Activities**Journal Editorships**

- Edition Editor: *IEEE Computer Graphics and Applications* (January 2008 Issue on Computational Aesthetics)
- Founding Online Editor: *ACM Transactions on Applied Perception*

Conference Organization

The ACM conference on Interactive Three Dimensional Graphics (I3D) was ranked by Cite-Seer as number 25 (top 2%) of the more than 1200 journals and conferences in Computer Science based on the average citation rate of publications. (<http://citeseer.ist.psu.edu/impact.html>)

Dagstuhl Seminars in Computer Science are gatherings of top investigators in a given research area. Dr. Gooch organized the 2006 seminar on Computational Aesthetics. This means that both his peers and the seminar reviewers recognize him as one of the top researchers in his field in the world. The Dagstuhl Seminars are frequently described as being the most productive academic events that the participant researchers have ever experienced.

- **General Chair:** *Eurographics Workshop on Computational Aesthetics* (June 2008 Lisbon, Portugal)
- **Program Chair:** *Interactive 3D (I3D)* (February 2008 Redwood City California)
- **General Chair:** *Non photorealistic Rendering and Animation (NPAR)* (July 2007 San Diego, California)
- **General Chair:** *Interactive 3D (I3D)* (April 2007 Seattle, Washington)
- **Organizer:** *Dagstuhl Seminar on Computational Aesthetics* (June 2006 Frankfurt Germany)
- **Organizer:** *Eurographics Workshop on Computational Aesthetics for Graphics, Visualization and Imaging* (May 2005 Girona Spain)
- **Organizer:** *Midgraph* (November 2004 Northwestern University)

Conference Program and Steering Committees

- Steering Committee: Graphics Interface (GI), 2006 – Present
- Program Committee: *Game Development for CS Education* (GDCSE) (February 2008 Miami Florida)
- Program Committee: *Non-Photorealistic Rendering and Animation 2008* (NPAR) (June 2008 Annecy, France)
- Program Committee: *Eurographics 2007* (September 2007 Prague, Czech Republic)
- Program Committee: *Game Development for CS Education* (GDCSE) (February 2007 Orlando Florida)
- Technical Programme Committee: *Third European Conference on Colour in Graphics, Imaging, and Vision* (CGIV 2006) (June 2006 Leeds, United Kingdom)
- Program Committee: *Interactive 3D* (I3D) (April 2005 Washinton D.C)

Technology Transfer

Patents

1. United States Provisional Patent Application Serial No. 194804 entitled *Retargeting Images for Small Displays*
Bruce Gooch and Vidya Setlur and Michael Lee Gleicher and Saeko Takagi and Ramesh Raskar, 2004.
2. United States Provisional Patent Application Serial No. 60/962,841 entitled *Process and Systems for Transforming Video Input Into Abstract Animations*
Bruce Gooch and Sven Olsen and Holger Winnemoller, 2006.
3. United States Provisional Patent Application Serial No. Serial no. 60/962,872 entitled *Customizable and Non-Linear Image and Video Smoothing Filter*
Bruce Gooch and Sven Olsen and Holger Winnemoller, 2006.
4. United States Provisional Patent Application Serial No. Serial no. 60/962,855 entitled *Process and Systems for Spatially Adaptive Pseudo-Quantization of Video Luminescence*
Bruce Gooch and Sven Olsen and Holger Winnemoller, 2006.
5. United States Provisional Patent Application Serial No. 60/962,871 entitled *Method System and Business Model to Convert Images and Moving Picture Sequences Into Stylized Representations Via Several Image Processing Operations*
Bruce Gooch and Sven Olsen and Holger Winnemoller, 2006.

Software Systems and Data

Dr. Gooch provides computer code and data that are used for both research and education. The "Bruce Gooch's Brain" data set is used in courses at graphics and visualization courses at over 100 Universities worldwide.

- Video Abstraction, 2006: 19,459 Downloads.
- Bruce Gooch's Brain, 2001: 37,486 Downloads.
- Artistic Vision, 2001: 2843 Downloads.

Outreach Activity

- UVic Engineering Freshman Orientation Demos 2008
- Microsoft Research Techfest, *Games and Exercise*, March 2008
- Uvic Campus Wide Video Game Design Challenge, March 2008
- Invited Talk: *Computer Graphics and Games at the University of Victoria*, University of British Columbia, February 2008
- Invited Talk: *Computer Graphics and Games at the University of Victoria*, University of Utah, November 2007
- UVic Engineering Freshman Orientation Demos 2007.
- I-Space Exhibition, Singapore Science Museum 2007. (over 100,000 visitors)
- UNESCO Culture Forum 2007, Monterrey, Mexico.
- IEEE Telus Software Engineering National Competition 2006, *Games and Exercise*
- SIGGRAPH 2006 Emerging Technology Exhibition. Boston, USA. (over 30,000 visitors)

Educational Publications

1. *Computer Graphics*
Bruce Gooch, Erik Reinhard, and Chris R. Johnson.
Encarta Encyclopedia, 2002.
2. *Siam Book Review:*
Realistic Image Synthesis Using Photon Mapping.
By Henrik Wann Jensen. Review by Bruce Gooch, Siam Review, 2002.

Community Activity

Invited Speaking Engagements

- University of British Columbia, March 2008, Department of Computer Science: *Video Games and Learning*
- University of Utah, November 2007, Department of Computer Science: *Games and Exercise*
- IEEE Visualization 2006, Course: *Medical and Scientific Illustration*
- Eurographics 2006, Course: *Medical and Scientific Illustration*
- ACM Siggraph 2006, Course: *Medical and Scientific Illustration*
- University of Tübingen, May 2006, Department of Computer Science: *Optimizing the Communication Content of Computer Generated Imagery*
- Nvidia Inc., May 2006: *Optimizing the Communication Content of Computer Generated Imagery*
- Purdue University, April 2006, Department of Computer Science: *Optimizing the Communication Content of Computer Generated Imagery*
- College of William and Mary, March 2006, Department of Computer Science: *Optimizing the Communication Content of Computer Generated Imagery*
- University of Victoria, March 2006, Department of Computer Science: *Optimizing the Communication Content of Computer Generated Imagery*
- University of California at Santa Cruz, March 2006, Department of Computer Science: *Optimizing the Communication Content of Computer Generated Imagery*

- Purdue University, October 2005, Department of Electrical Engineering: *Image Retargeting*
- Cambridge University, June 2005, Rainbow Graphics Group: *Non-Photorealistic Rendering*
- Oxford University, June 2005, Brasenose Computer Graphics Ice Cream Social: *Non-Photorealistic Rendering*
- Washington University St. Louis, October 2004, Department of Computer Science: *Non-Photorealistic Rendering*
- ACM Siggraph 2003, Course: *Theory and Practice of Non-Photorealistic Graphics: Algorithms, Methods, and Production Systems*.
- Brigham Young University, April 2003, Department of Computer Science: *Non-Photorealistic Rendering*
- University of Iowa, March 2003, Department of Computer Science: *Non-Photorealistic Rendering*
- Northwestern University, March 2003, Department of Computer Science: *Non-Photorealistic Rendering*
- Notre Dame University, February 2003, Department of Computer Science: *Non-Photorealistic Rendering*
- Drexel University, January 2003, Department of Computer Science: *Non-Photorealistic Rendering*
- ACM Siggraph 2002, Course: *Perceptual and Artistic Principles for Effective Computer Depiction*
- Disney Feature Animation, August 2000: *Non-Photorealistic Rendering*
- ACM Siggraph 1999, Course: *Non-Photorealistic Rendering*

Signature: _____

Date: _____