

Colin Smith

6611 54 Ave NW
Calgary, AB, Canada
T3B 3N4

403 288 0748

smithco@gmail.com

<http://zkwarl.blogspot.com>

<http://www.linkedin.com/in/smithco>

PROFILE

I am a computer scientist, with research experience in computer graphics with applications to geometric and biological modelling and industrial experience with hardware-accelerated and cluster-based solutions for electromagnetic simulations. In both the academic and industrial contexts, I have gained much experience with application design and development, particularly with implementations in C++, and parallel algorithms.

SKILLS

Technologies

C++, C, Python, OpenGL, GLSL, MPI, L-systems

General

Research, scientific modelling, procedural modelling, geometric modelling, graphics programming, cluster programming

EXPERIENCE

Software Developer, Acceleware Corp.

Calgary, Alberta, Canada — August, 2007 – July, 2008

Worked on Acceleware's FDTD product, used for simulating electromagnetic fields. This included implementing features parallelized on graphics hardware with GLSL and on clusters with MPI.

Research Assistant, UC Davis, Department of Plant Sciences

Davis, California, USA — March, 2007 – July, 2007

Maintenance and development of L-PEACH, an L-system model of growth and hydrocarbon distribution in peach trees.

Post-doctoral Researcher, ENSAM/INRA Montpellier

Montpellier, Languedoc-Roussillon, France — January, 2006 – January, 2007

Development of MAppleT, an L-system simulation of apple tree growth based on statistical and biomechanical models.

Research Assistant, Department of Computer Science, University of Calgary

Calgary, Alberta, Canada — May, 2001 – December, 2006

Maintenance and development of VLAB for Linux and OS X and L-Studio for Windows, software suites used for developing simulations (information on this software available at http://algorithmicbotany.org/virtual_laboratory). Creation of the digital edition of The Algorithmic Beauty of Plants (available for free download at <http://algorithmicbotany.org/papers/#abop>). Assistance in creating assets and models for various publications and research projects.

Programmer, Information Services, Mount Royal College

Calgary, Alberta, Canada — May–August, 1999 and May–August, 2000

Migration of a legacy database and maintenance of database reports.

Assistant Technician, Microserve

Calgary, Alberta, Canada — May–August, 1998

Assistant PC hardware technician for custom-built computers, hardware problem diagnoses and warranty repairs.

EDUCATION

Degrees

Doctor of Philosophy
Computer Science, University of Calgary
June, 2006

Bachelor of Science
Computer Science, University of Calgary
November, 2001

Course Work

Graduate courses on modelling and visualization of biological systems, geometric modelling of discrete surfaces (*e.g.*, polygon meshes), information visualization

Notable undergraduate courses include computer graphics, image analysis and games programming

PUBLICATIONS

Refereed Publications

Faramarz Samavati, Hamid-Reza Pakdel, Colin Smith and Przemyslaw Prusinkiewicz. *Reverse Loop Subdivision*. Iranian Journal of Mathematical Sciences and Informatics, 2 (1), 2007.

D. da Silva, and F. Boudon. and C. Godin. and O. Puech, and C. Smith and H. Sinoquet. *A Critical Appraisal of the Box Counting Method to Assess the Fractal Dimension of Tree Crowns*. Lecture Notes in Computer Sciences (Proceedings of ISVC 2006), 9241:751-760, 2006.

Przemyslaw Prusinkiewicz, Faramarz Samavati, Colin Smith, and Radoslaw Karwowski. *L-system description of subdivision curves*. International Journal of Shape Modeling, 9(1):41-59, June 2003.

Colin Smith, Przemyslaw Prusinkiewicz, and Faramarz Samavati. *Local specification of surface subdivision algorithms*. Presented at the Workshop on Applications of Graph Transformations with Industrial Relevance AGTIVE 2003, in Charlottesville, VA, September 27 to October 1, 2003. Lecture Notes in Computer Science 3062:313-327 (Springer).

Note: Versions of *L-system description of subdivision curves* and *Relational specification of surface subdivision algorithms* have appeared as part of notes for the SIGGRAPH 2003 course L-systems and beyond.

Refereed Presented Abstracts

Colin Smith and Przemyslaw Prusinkiewicz. *Simulation Modeling of Growing Tissues*. Presented at the 4th International Workshop on Functional-Structural Plant Models in Montpellier, France, June 7-11.

Doctoral Dissertation

Colin Smith. *On Vertex-Vertex Systems and Their Use in Geometric and Biological Modelling*. Ph.D. dissertation, University of Calgary. 2006.

Technical Reports

Faramarz Samavati, Hamid-Reza Pakdel, Colin Smith and Przemyslaw Prusinkiewicz. *Reverse Loop Subdivision*. Technical Report 2003-730-33 for the Department of Computer Science, University of Calgary. November 4, 2003.

AWARDS

Best Long Presentation at the Workshop on Applications of Graph Transformations with Industrial Relevance. October, 2003. Awarded for the presentation of the paper Local Specification of Surface Subdivision Algorithms

Alberta Heritage Graduate Student Scholarship. \$2000.00, awarded by the government of Alberta, 2003.

REFERENCES

Dan Cyca, Director of Engineering, Acceleware Corp. dan.cyca@acceleware.com

Matt Hughes, Senior Software Developer, Acceleware Corp. matt.hughes@acceleware.com