Natural Sciences and Engineering Research Council of Canada Conseil de recherches en sciences naturelles et en génie du Canada

FORM 100
Personal Data Form
PART I

Date
2013/06/17

Family name	Given name	Initial(s) of all given names	Personal identification no. (PIN)
Samavati	Faramarz	F	**Valid** 253382

☐ I hold a faculty position at an eligible Canadian college (complete Appendices B1 and C)

☐ I do not or will not hold an academic appointment at a Canadian postsecondary institution

_____

Place of employment other than a Canadian postsecondary Institution (give address in Appendix A)

APPOINTMENT AT A POSTSECONDARY INSTITUTION

Title of position
Professor

Tenured or tenure-track academic appointment   Yes [X]   No [ ]

Department
Computer Science

Part-time appointment [ ]   Full-time appointment [X]

Campus

- For all non-tenured or non tenure-track academic appointment and Emeritus Professors, complete Appendices B & C
- For life-time Emeritus Professor and part-time positions, complete Appendix C

Canadian postsecondary institution
Calgary

ACADEMIC BACKGROUND

Degree	Name of discipline	Institution	Country	Date yyyy/mm
Bachelor's	Mathematical and Computer Sciences	Sharif University of Technology	IRAN, ISLAMIC REPUBLIC OF	1987 / 9
Master's	Mathematical and Computer Sciences	Sharif University of Technology	IRAN, ISLAMIC REPUBLIC OF	1991 / 10
Doctorate	Mathematical and Computer Sciences	Sharif University of Technology	IRAN, ISLAMIC REPUBLIC OF	1999 / 04

TRAINING OF HIGHLY QUALIFIED PERSONNEL

Indicate the number of students, fellows and other research personnel that you:

	Currently		Over the past six years (excluding the current year)		
	Supervised	Co-supervised	Supervised	Co-supervised	Total
Undergraduate			8		8
Master's	5	2	11	5	23
Doctoral	4	3	3		10
Postdoctoral					
Others					
Total	9	5	22	5	41

Form 100 (2009 W)

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Personal information collected on this form and appendices will be stored in the Personal Information Bank for the appropriate program. **PROTECTED WHEN COMPLETED**

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Not Completed

ACADEMIC, RESEARCH AND INDUSTRIAL EXPERIENCE (use one additional page if necessary)

Position held (begin with current)	Organization	Department	Period (yyyy/mm to yyyy/mm)
Professor	Calgary	Computer Science	2001/07
Associate Professor	University of Calgary	Computer Science	2006/04 to 2012/04
Adjunct Associate Professor	Technical University of Lisbon, Portugal	Computer Engineering Department	2006/01 to 2009/01
Assistant Professor	University of Calgary	Computer Science	2001/07 to 2006/06
Assistant Professor	Shahid Beheshti University, Tehran	Computer Science	1999/08 to 2001/08
Head of Scientific Computing Centre	IPM, Tehran	Mathematics	1999/08 to 2000/12
Visiting Research Scholars	University of Waterloo	Computer Science Department	1997/08 to 1998/03
Part time Instructor	Sharif University of Technology	Mathematical Sciences	1994/08 to 1998/06
Instructor	Air Force University, Tehran	Computer Engineering	1992/01 to 1993/10

RESEARCH SUPPORT

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support **(including NSERC grants and university start-up funds)** held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			

a) Support held in the past 4 years

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
Faramarz Samavati	Intuitive Interfaces for Geometric Modelling NSERC Discovery Grant 60 hours/month	19,000 19,000 19,000 19,000 19,000	2007 2008 2009 2010 2011
Faramarz Samavati	Visiting Researcher Support Grant Technical University of Lisbon	10,000	2008
Faramarz Samavati	Improving Visibility Testing in Terrain Navigation MITACS MITACS Accelerate 6 hours/month	15,000(100%)	2011
Faramarz Samavati	Anthropometric Topography Observation and Measurement NSERC ENGAGE 10 hours/month	25,000(100%)	2011

RESEARCH SUPPORT

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support **(including NSERC grants and university start-up funds)** held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			

a) Support held in the past 4 years

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
Faramarz Samavati	Energy Systems Modeling Initiative-Interactive Website Design. Institute for Sustainable Energy, Environment and Economy (ISEEE) & financial support from the Canada School of Energy and Environment. ISEEE & CSEE Research Sub-grant of CSEE Website Grant 10 hours/month	25,000(100%) 25,000(100%)	2012 2013
Faramarz Samavati	Anthropometric Topography Observation & Measurement (ATOM) NSERC Collaborative Research and Development Grant 30 hours/month	64,800(100%) 62,300(100%) 64,300(100%)	2013 2014 2015

b) Support currently held

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
Faramarz Samavati, Principal Network Investigator	New media, games, and animation, $23,500,000, 55 Principal Network Investigators, Lead PI and scientific director: Kellogg Booth. Government of Canada Network of Centres of Excellence (NCE), 30 hours/month	55,000(100%) 38,000(100%) 35,000(100%) 40,000(100%)	2010 2011 2012 2013 2014
Faramarz Samavati	Multiresolution Representation of Hexagon Grids for Digital Earth NSERC Collaborative Research and Development Grant 45 hours/month	35,356 40,522 51,522	2011 2012 2013

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	Personal identification no. (PIN)	Family name
	Valid 253382	Samavati

RESEARCH SUPPORT			
Family name and initial(s) of applicant	**Title of proposal, funding source and program, and time commitment (hours/month)**	**Amount per year**	**Years of tenure (yyyy)**
List all sources of support **(including NSERC grants and university start-up funds)** held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			
b) Support currently held			
Faramarz Samavati	Multiresolution Representation of Hexagon Grids for Digital Earth PYXIS Innovation Seed Funding for NSERC CRD	32,000 20,000 20,000	2011 2012 2013
Faramarz Samavati	Multiresolution for Interactive Modeling NSERC Discovery Grant 60 hours/month	28,000 28,000 28,000 28,000 28,000	2012 2013 2014 2015 2016

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Highly Qualified Personnel (HQP)

Provide personal data about the HQP that you currently, or over the past six years, have supervised or co-supervised.

	Personal identification no. (PIN)			Family name	
	Valid 253382			Samavati	

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Erika Harrison	Doctoral (In Progress)	Supervised 2012 - 2016	General area of Interactive Modelling	Current PhD Student
AmirHessam Moltaji	Master's (In Progress)	Supervised 2013 - 2015	General area of Interactive Modelling	Current MSc Student.
Ronan Amorim	Doctoral (In Progress)	Co-supervised 2011 - 2015	General area of Interactive Modelling and Visualization	Current PhD Student (co-supervised with Prof. Costa
Elaheh Moghadam	Master's (In Progress)	Co-supervised 2012 - 2014	Sketch-based Dance Choreography	Current Student in Computer Media Design Program
Kaveh Ketabchi	Master's (In Progress)	Supervised 2012 - 2014	General area of Interactive Modelling	New MSc Student
Mark Sherlock	Master's (In Progress)	Supervised 2012 - 2014	Anthropometric Topography Observation and Measurement	New MSc Student
Elisa Portes	Doctoral (In Progress)	Co-supervised 2010 - 2014	Multidimential Projection	Current PhD Student
Mark Koleszar	Master's (In Progress)	Co-supervised 2011 - 2013	General area of Interactive Modelling and Simulation	Current MSc Student (co-supervised with Prof.
Jeff Packer	Master's (Completed)	Supervised 2010 - 2013	Focus + Context via Snaking Paths	Software Developer, Calgary.
Ali Mahdavi-Amir	Doctoral (In Progress)	Supervised 2009 - 2013	Data Structures for Subdivision Surfaces	Current PhD Student
Mahmudul Hasan	Doctoral (In Progress)	Supervised 2009 - 2013	Multiresolution in Reservoir Visualization	Current PhD Student with NSERC CGSD2 Scholarships
Javad Sadeghi	Doctoral (Completed)	Supervised 2007 - 2013	Smooth Reverse Subdivision	Postdoctoral Fellow, University of Calgary.
Jeff Nicholson	Undergraduate (In Progress)	Supervised 2012 - 2012	Model Creation and Anthropometric Measurement	Undergraduate Student Research Awards.
Mark Sherlock	Undergraduate (Completed)	Supervised 2011 - 2012	Anthropometric Topography Observation and Measurement	Current MSc Student.
Agustin Conde	Master's (Completed)	Co-supervised 2010 - 2012	Sketch-based Tool for Prototyping 3D Stories	Software Engineer at LiveVox
Nader Hamekasi	Master's (Completed)	Supervised 2010 - 2012	Interactive Modeling of Muqarnas	Software Developer, Pyxis Innovation Inc, Calgary
Troy Alderson	Master's (In Progress)	Supervised 2010 - 2012	Improving Visibility Testing in Terrain Navigation	Current MSc Student
(Name withheld)	Master's (Completed)	Co-supervised 2009 - 2012	Using Virtual Reality to Improve Design Communication.	.
Adam Runions	Doctoral (In Progress)	Co-supervised 2008 - 2012	Modeling Leaf Form Development	Current PhD Student
Erika Harrison	Master's (Completed)	Supervised 2009 - 2011	Equal Area Projection	Current PhD Student

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Highly Qualified Personnel (HQP)

Provide personal data about the HQP that you currently, or over the past six years, have supervised or co-supervised.

	Personal identification no. (PIN)	Family name
	Valid 253382	Samavati

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Shannon Halbert	Master's (In Progress)	Supervised 2009 - 2011	Modeling of Branching Structures	Current MSc Student
Luke Olsen	Doctoral (Completed)	Supervised 2006 - 2011	Image-Assisted Modeling from Unconstrained Sketches	Software Development Engineer, Microsoft.
John Brosz	Doctoral (Completed)	Supervised 2005 - 2011	The Flexible Projection Framework	Held a postdoctoral position at the University of Calgary.
(Name withheld)	Undergraduate (Completed)	Supervised 2009 - 2009	Cloth Modeling by Example	QA Tester at Bioware. Edmonton.
Kyle Dormer	Undergraduate (Completed)	Supervised 2009 - 2009	Simulating Stereopsis in Humans and Animals	Applications Developer at Getty Images. Calgary.
Richard Pusch	Master's (Completed)	Supervised 2006 - 2009	Constrained based Surface Deformation.	Awarded PGS scholarship (declined).
(Name withheld)	Undergraduate (Completed)	Supervised 2008 - 2008	Sketch-Based Cloud Modeling.	Current Undergraduate Student
Marc Stiver	Undergraduate (Completed)	Supervised 2008 - 2008	Sketch-Based Cloud Modeling	Graphics Programmer Seljax Inc.
Zaw Aung	Undergraduate (Completed)	Supervised 2008 - 2008	Quadrangulating Simple Polygons for Subdivision	Software Developer at MedCloud Inc. Calgary.
Mahsa Eshraghi	Master's (Completed)	Supervised 2006 - 2008	3D Mesh Watermarking	Software Developer, Smart Technologies, Calgary.
Jason Chen	Master's (Completed)	Supervised 2005 - 2008	Interactive Volume Deformation and Manipulation	Software Developer, Electronic Art, Vancouver.
Mitra Shirmohamma	Master's (Completed)	Supervised 2004 - 2008	Geometric Modeling with L-systems	IBM, Associate Project Manager
Sean Lynch	Undergraduate (Completed)	Supervised 2007 - 2007	Sketch-based Space Deformation	MSc Student, University of Calgary
Aaron Severn	Master's (Completed)	Supervised 2004 - 2006	Sketch-based Assembly of Subdivision Surfaces	Software Developer, Side Effect, Toronto
Lakin Wecker	Master's (Completed)	Supervised 2004 - 2006	Synthesizing Techniques based on Multiresolution	Software Developer, Evolves Inc
Luke Olsen	Master's (Completed)	Supervised 2004 - 2006	Constraining Wavelets for Multiresolution	Software Development Engineer, Microsoft.
Torin Taerum	Master's (Completed)	Co-supervised 2004 - 2006	Real-Time Contextual Close-up of Clinical Volumetric Data	Software developer, Calgary Scientific Inc.
Joseph Cherlin	Master's (Completed)	Co-supervised 2003 - 2006	Sketch-based Modeling with few Strokes	Game developer, Liquid Entertainment.
Meru Brunn	Master's (Completed)	Co-supervised 2002 - 2006	Curve Synthesis by Example	Graphics Programmer, Veritas Inc.

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1. Most Significant Contributions to Research (last 6 years)

Geometric Modeling: Multiresolution, Reverse Subdivision and Applications. This series of works started with a close collaboration with Prof. Richard Bartels (University of Waterloo) in 1997. To find a multiresolution representation for general meshes, we extended our previous works on local least squares by replacing matrix notation with diagram notation and matrix-matrix operations with diagram-diagram operations [P14]. These changes allow us to apply local least squares and linear conditions to regular triangular meshes consistent with Loop and Butterfly subdivisions, and they point the way to constructions on other, non-tensor-product meshes. In a more theoretical work [P18], jointly with Prof. Gene Golub (Stanford University), we compared the local and full least squares, showing that full least squares are well estimated by local least squares in the reversal of subdivisions. In a later work, we replaced the resulting bilinear equations from our previous works with a completely numerical construction [P6]. This work removes the need of solving the bilinear system symbolically. For irregular meshes obtained from Loop and Catmull-Clark subdivision, I introduced the concept of constraining wavelets and details [P16]. This work was developed with my graduate student Luke Olsen, and we have shown the effectiveness of this concept for Loop subdivision. We also successfully applied this approach to Catmull-Clark subdivision [P36] and some other subdivision schemes [P9]. Recently, we have included energy minimization into the multiresolution framework [P5], [P8] which will be an efficient tool for model synthesis and by-example applications. I have also tried to express the resulting operations using an alternative index-free technique for specifying and generating subdivision and reverse subdivision schemes in context-sensitive L-systems by a joint work with my colleague Prof. Prusinkiewicz (University of Calgary) in [P32].

I have explored numerous applications of the above methods with my graduate students. Application to iris synthesis [P7], curve synthesis by example [P19], terrain by example [P24], [P48] fixing voids in terrains [P13], and efficient representation of volumetric data sets [P48] are example works in this direction. In addition, as a side project, the general idea of multiresolution has been used for real-time synthesis of ocean water [P11]. We have summarized some of the important results and fundamental aspects of our previous works and also surveyed some applications [P25]. These works have also been fruitful with respect to industrial contributions. We have already filed a patent [P52] and established collaboration with Calgary Scientific Inc. Recently, since some of these achievements have recognizable industrial potential, several companies (PYXIS, CMG and C4i) have already entered into collaboration with my group.

Sketch-based and Interactive Modeling. In some of the applications which I have explored with my graduate students, it was necessary to design a natural interface for geometric modeling. Sketch-based methods have recently received great attention as a way of providing such an interface. To combine and assemble simple primitives and their instances to create complex multi-components objects, Aaron Severn - my graduate student - implemented a method for controlling transformations with simple strokes [P44]. To support more natural sketching mechanism, Richard Pusch, another graduate student of mine, worked on forming a single curve from many small strokes [P15] which was an important missing component within Sketch-based interfaces. In a recent work with my PhD student Luke Olsen, we provided a robust method for stroke extraction and classification tailored for mesh inflation [P33]. For fast stroke and gesture recognition, we also developed a new representation of the features based on angular quantization [P41]. In exploring interactive interfaces for subdivision and multiresolution models, we used sketching methods to add features directly to general meshes. The provided method makes use of Incremental Subdivision, a technique developed by my research group [P20]. We also proposed an image-based modeling/rendering for creating freeform surfaces from sketch-annotated images [P30], [P4]. The resulting mesh has subdivision connectivity capable of modification with multiresolution editing tools. In collaboration with Prof. Nasri (American University of Beirut), we also introduced a sketch-based system for high-quality subdivision surfaces [P37]. Recently, we presented the taxonomy of sketch-based modeling in [P23], and surveyed major publications in this area in [P10].

The augmentation of sketched curves on base surfaces or volumes without disturbing the geometry or connectivity of these base models is also a challenging problem. To address this issue, with my (co-supervised) PhD student Adam Runions, we generalized NURBS surfaces as the Partition of Unity Parametrics (PUPs) which naturally supports sharp and semi-sharp features [P3]. I have co-edited a research book in the area of sketch-based modeling and interfaces with my colleague Prof. Jorge [P22]. In another applied project, Marc Stiver - one of my NSERC summer students - with the help of other students in my group, developed a robust sketch-based interface for cloud modeling [P31]. Toward specific applications, Jason Chen, another graduate student of mine, worked on a new paradigm for intuitive interaction with volumetric datasets (e.g. CT and MRI) [P12], [P45]. Due to the important practical and industrial potential, a patent has been identified and applied for the resultant work [P51]. In general, University Technologies International (UTI) has recognized the achievements from my research in sketch-based modeling and interfaces as a technology ready for commercialization. This company is currently in contact with companies like Autodesk and Disney for possible technology transfer.

Computational Aesthetics. I have investigated non-photo realistic rendering (line-drawing, pen/ink drawing and stroke based-rendering techniques) and modeling in a series of works with my grad students and colleagues [P17], [P19], [P21]. Since one of the goals in non-photo realistic rendering is to find clean and expressive curves for rendering 3D models, this area also closely relates to sketch-based modeling. In another project in this area, my PhD student, John Brosz, worked on non-linear flexible projection which goes beyond standard projections [P29], [P35], [P42]. One of the main concepts in this work is to employ modeling techniques and interfaces for deforming the viewing volume as a new way of controlling projection. As a step toward non-photorealistic modeling, I also worked on modeling and animation of floral and 3D patterns [P38], [P26].

2. Research Contributions and Practical Applications

(The names of my graduate students are bold and underline.)

Refereed Journal Publications

[P1]**Harrison, E., Mahdavi-Amiri, A.,** and Samavati, F.F., Analysis of Inverse Snyder Optimization, to appear in Transactions on Computational Science 2012. (NSERC)

[P2]Prusinkiewicz, P., **Shirmohammadi, M.,** and Samavati, F.F., L-systems in Geometric Modeling, International Journal of Foundations of Computer Science, Volume No.23, Issue No. 1, pp. 133-146, 2012. (NSERC)

[P3]**Runions, A.,** and Samavati, F.F., "Partition of Unity Parametrics: A Framework for Meta-Modeling", Vol. 27, No. 6-8, pp. 495-505, *The Visual Computer* 2011. This paper was selected as one the best papers of CGI 2011 to be published in the Visual Computer. The paper also received "Best Student Paper Award". (NSERC, GRAND NCE)

[P4]**Olsen, L.,** Samavati, F.F., Jorge, J., "NaturaSketch: Modeling from Images and Natural Sketches", Vol. 31, Issue 6, pp. 24-34, IEEE Computer Graphics and Applications 2011. IEEE Computer Graphics and Applications 2011 Best Paper Award.(NSERC, GRAND NCE)

[P5]**Sadeghi, J**., and Samavati, F.F., Smooth Reverse Loop and Catmull-Clark Subdivision, Vol 73, Issue 5, pp. 202-217, Graphical Models, 2011. (NSERC, GRAND NCE)

[P6]Bartels, R., and Samavati, F.F. Multiresolutions Numerically from Subdivisions, *Computer & Graphics,* Vol. 35, No. 2, pp. 185-197, 2011. (NSERC)

[P7]**Wecker, L.**, Samavati, F.F. and Gavrilova, M. "A Multiresolution Approach to Iris Synthesis", *Computer & Graphics,* Vol. 34, No. 3, pp. 468-478, 2010. (NSERC)

[P8]**Sadeghi, J**., and Samavati, F.F. "Smooth Reverse Subdivision", *Computer& Graphics,* Vol. 33, No. 3, pp. 217-225, June 2009. (NSERC)

[P9]**Olsen, L.**, and Samavati, F.F., "A Discrete Approach to Multiresolution Curves and Surfaces", *Transactions on Computational Science VI, Springer,* Vol. 5730, 342-361, 2009. (NSERC)

[P10]**Olsen, L**., Samavati, F.F., Sousa, M.C., Jorge, J. "Sketch-Based Modeling: A Survey", *Computer & Graphics*, Vol. 33, No. 1, pp. 85-103, February 2009. (NSERC)

[P11] Miandji, E., Sargazi Moghadam, M. H., Samavati, F.F., Emadi, M. "Real-time Multi-band Synthesis of Ocean Water with New Iterative Up-Sampling Technique", *The Visual Computer*, Vol. 25, No. 5-7, pp. 697-705, May 2009. (NSERC)

[P12]<u>Chen, H.J.</u>, Samavati, F.F., and Sousa, M.C. "GPU-based Point Radiation for Interactive Volume Sculpting and Segmentation, *The Visual Computer*, Vol. 24, No. 7-9, pp. 689-698, July 2008. (NSERC)

[P13]<u>Wecker, L.</u>, Samavati, F.F. and Gavrilova, M. "Contextual Void Patching for Digital Elevation Model", *The Visual Computer*, Vol. 23, No. 9-11, pp. 881-890, September 2007. (NSERC)

[P14]Samavati, F.F. and Bartels, R. "Diagrammatic Tools for Generating Biorthogonal Multiresolutions", *International Journal of Shape Modeling,* Vol. 12, No. 1, pp. 47-73, 2006. (NSERC)

[P15]<u>Pusch, R.</u>, Samavati, F.F., Nasri, A., and Wyvill, B. "Improving the Sketch-Based Interface: Forming Curves from Many Small Strokes", *The Visual Computer*, Vol. 23, No. 9-11, pp. 955-962, September 2007. (NSERC)

[P16]<u>Olsen, L.,</u> Samavati, F.F. and Bartels, R. "Multiresolution for Curves and Surfaces Based on Constraining Wavelets", *Computer & Graphics,* Vol.31, No.3, pp. 449-462, June 2007. (NSERC)

[P17]<u>Runions, A.,</u> Samavati, F.F., and Prusinkiewicz, P., "Ribbons: A Representation for Point Clouds", *The Visual Computer*, Vol. 23, No. 9-11, pp. 945-954, September 2007. (NSERC)

[P18]Bartels, R., Golub, G. and Samavati, F.F. "Some Observations on Local Least Squares", *BIT Numerical Mathematics, Volume 46, Number 3,* pp. 455-477, 2006. (NSERC)

[P19]<u>Brunn, M.</u>, Sousa, M.C. and Samavati, F.F. "Capturing and Re-Using Artistic Styles with Multiresolution Analysis", *International Journal of Images and Graphics,* Vol. 7, No. 4, pp. 593 – 615, 2007. (NSERC)

[P20]<u>Pakdel, H.R.</u> and Samavati, F.F. "Incremental Subdivision for Triangle Meshes*", International Journal of Computational Science and Engineering,* Vol. 3, No. 1, pp. 80-92, 2007. (NSERC)

[P21]Foster, K., Sousa, M.C., Samavati, F.F. and Wyvill, B. "Polygonal Silhouette Error Correction: A Reverse Subdivision Approach", *International Journal of Computational Science and Engineering,* Vol. 3, No. 1, pp. 53-70, 2007. (NSERC)

Books (Editor)

[P22]Jorge, J. and Samavati, F.F., Sketch-based Modeling and Interfaces, 1st Edition, 386 p., ISBN: 978-1-84882-811-7, Springer 2011.

Refereed Chapters in Research Books

[P23]<u>Olsen, L</u>., Samavati, F.F., Sousa, M.C., Jorge, J. "A Taxonomy of Modeling Techniques using Sketch-based Interfaces", *Eurographics, STARS,* 2008. (NSERC)

[P24]<u>Brosz, J.,</u> Samavati, F.F. and Sousa, M.C. "Terrain Synthesis By-Example", *Communications in Computer and Information Science: Advances in Computer Graphics and Computer Vision,* Springer, Vol. 4, pp. 58-77, 2008. (NSERC)

[P25]Samavati, F.F., Bartels, R., and <u>Olsen, L</u>. "Local B-Spline Multiresolution with Examples in Iris Synthesis and Volumetric Rendering", *Image Pattern Recognition: Synthesis and Analysis in Biometrics*, Series in Machine Perception and Artificial Intelligence , Vol. 67, pp. 65-101, *World Scientific Publishing,* 2007. (NSERC)

Refereed Conferences Papers

[P26]Mahdavi-Amiri, A., and Samavati, F.F., ACM: Atlas of Connectivity Maps for semiregular models, Graphics Interface 2013, 10 pages, Regina, Saskatchewan, Canada. May 2013. Received Michael A. J. Sweeney Award for the best student papers in graphics track.

[P27]Sadeghi, J., and Samavati, F.F., Local Fairing with Local Inverse, Graphics Interface 2013, 10 pages, Regina, Saskatchewan, Canada. May 2013.

[P28]Hamekasi, N., Samavati, F.F., and Nasri, A., Interactive Modeling of Muqarnas, to appear in ACM/Eurographics Symposium of *Computational Aesthetics in Graphics, Visualization, and Imaging (2011), collocated with SIGGRAPH 2011,* Vancouver, Canada, August 2011. (GRAND NCE)

[P29]Brosz, J., Samavati, F.F., "Shape Defined Panoramas", *Proceedings of IEEE Shape Modeling International,* pp. 57-67, Aix-en-Provence, France, June 2010. (NSERC)

[P30]Olsen, L., and Samavati, F.F., "Image-Assisted Modeling from Sketches", *Proceedings of Graphics Interface 2010*, Ottawa, Canada, June 2010. (NSERC, GRAND NCE)

[P31]Stiver, M, **Baker, A**, **Runions, A** and Samavati, F.F., Sketch Based Volumetric Clouds, *Proceedings of Smart Graphics 2010*, pp. 1-12, Banff, Canada, June 2010. (NSERC, GRAND NCE)

[P32]Prusinkiewicz, P., **Shirmohammadi, M.,** and Samavati, F.F., L-systems in Geometric Modeling, *Proceedings of 12th Annual Workshop on Descriptional Complexity of Formal Systems (DCFS 2010),* , pp. 1-12, Saskatoon, Canada, Aug 8-10, 2010. (NSERC)

[P33]Olsen, L., and Samavati, F.F., "Stroke Extraction and Classification for Mesh Inflation", *Proceedings of Eurographics/ACM Symposium on Sketch-Based Interfaces and Modeling,* pp. 9-16, Annecy, France from June 7-10, 2010. (NSERC, GRAND NCE)

[P34]Pusch, R., Samavati, F.F., "Local Constraint-Based General Surface Deformation", *Proceedings of IEEE Shape Modeling International,* pp. 256-260, Aix-en-Provence, France, short paper, June 2010.

[P35]Brosz, J., Carpendale, S., Samavati, F., Wang, H., and Dunning, A., "Art and Nonlinear Projection", Bridges (Mathematics, Music, Art, Architecture, Culture), Banff, Alberta, Canada, 2009.

[P36]Olsen, L., and Samavati, F.F., "A Discrete Approach to Multiresolution Curves and Surfaces", *International Conference on Computational Science and its Applications, published by IEEE Computer Society,* pp. 468-477, Perugia, July 2008. (NSERC)

[P37]Nasri, A., Bou Karam, W., and Samavati, F.F. "Sketch-based Subdivision Models", Sixth Eurographics/ACM Symposium on Sketch-Based Interfaces and Modeling, pp. 53-60, New Orleans, USA, August 2009. (NSERC)

[P38]Etemad, K., Samavati F. F., Prusinkiewicz P., "Animating Persian floral patterns". *Computational Aesthetics in Graphics, Visualization, and Imaging*, pp. 25-32, Lisbon, 2008. (NSERC)

[P39]Liu, X., Gavrilova, M. and Samavati, F.F., "NURBS Fusion", *International Conference on Computational Science and its Applications, published by IEEE Compute Society,* pp. 514-522, Perugia, Italy, July 2008. (NSERC)

[P40]Eshraghi, M., and Samavati, F.F. "3D Watermarking Robust to Accessible Attacks", *Immersive Telecommunication, in association with ACM Multimedia,* October 2007. (NSERC)

[P41]Olsen, L., Samavati, F.F., Sousa,M.C., "Fast Stroke Matching by Angle Quantization", *Immersive Telecommunication,in association with ACM Multimedia,* October 2007. (NSERC)

[P42]Brosz, J., Samavati, F.F., Carpendale, S., and Sousa, M.C. "Single Camera Flexible Projection", *NPAR 2007: The 5th International Symposium of Non-Photorealistic Animation and Rendering, In Cooperation with ACM SIGGRAPH and Eurographics*, pp. 33-42, August 2007, USA. (NSERC)

[P43]Xin, M., Sharlin, E., Sousa, M.C, Greenberg, S., and Samavati, F.F. "Purple Crayon – From Sketches to Interactive Environment", *Short paper, ACM Proceedings of the International Conference on Advances in Computer Entertainment Technology*, pp. 208-211, Austria June 13 - 15, 2007.

[P44]Severn, A, Samavati, F.F., and Sousa, M.C. "Transformation Strokes", *Proceedings of the 3rd Eurographics Workshop on Sketch-Based Interface and Modeling,* pp. 73-81, Vienna, Austria, September 2006. (NSERC)

[P45]Chen, H . J., Samavati, F.F., Sousa, M.C. and Mitchell, R. "Sketch-Based Volumetric Seeded Region Growing", *Proceedings of the 3rd Eurographics Workshop on Sketch-Based Interface and Modeling*, pp. 123-129, Vienna, Austria, September 2006. (NSERC)

[P46]Severn, A. and Samavati, F.F. "Fast Intersection for Subdivision Surfaces", *International Conference on Computational Science and its Applications,* Lecture Notes in Computer Science 3980, pp. 91-100, Glasgow, UK, May 2006. (NSERC)

[P47]Anastacio, F., Sousa, M.C., Samavati, F.F. and Jorge, A.J. "Modeling Plant Structures Using Concept Sketches", *Proceedings of the 4th International Symposium on Non-Photorealistic Animation and Rendering(NPAR),* Organized by ACM SIGGRAPH and Eurographics, pp. 105- 113, Annecy, France, June 2006. (NSERC)

[P48]<u>Taerum, T.,</u> Sousa, M.C., Samavati, F.F., Chan, S. and Mitchell, R. "Real-Time Super Resolution Contextual Close-up of Clinical Volumetric Data", *Proceedings of the Eurographics /IEEE Symposium on Visualization*, pp. 347-354, Lisbon, Portugal, May 2006. (NSERC)

[P49]<u>Brosz, J.,</u> Samavati, F.F. and Sousa, M.C. "Terrain Synthesis By-Example", *Proceeding of International Conference on Computer Graphics Theory and Applications,* in Association with Eurographics, Lisbon, Portugal, February 2006. (NSERC)

[P50]Patents
[P51]Interactive Volume Tools Using GPU-Based Point Radiation, US Patent, Pending 2008, Inventors: **<u>Jason Chen</u>**, Faramarz Samavati, Mario Costa Sousa. Commercialized by University Technologies International.
[P52]Real-Time Super Resolution Contextual Close-up of Clinical Volumetric Data, US Provisional Patent, Pending, 2005, Inventors: R. Mitchell, M. C. Sousa, F. F. Samavati, **<u>T. Taerum</u>**, S. Chan.

3. Other Evidence of Impact and Contributions
Honours:
2013 Digital Alberta Awards, best in cross-platform content. Received best paper awards three times during past 3 years (see the publication list). Won Plug and Play Accelerator Canada in Calgary 2012 for the clothing size start-up (team member). Nominated four times nominations by the department of Computer Science for the best supervision awards. Received ACM Recognition of Service Award (co-chair of SBIM 2009).

Professional activities:
Associate Editor, Computers & Graphics, Elsevier, since June 2011. Program Chair, Graphics Interface 2013. General co-chair, sixth EuroGraphics/ACM Symposium on Sketch-based Interfaces and Modeling (SBIM '09). Program Committee, Eurographics 2013, SBIM 2010- 2013, Shape Modeling SMI 2007-2010, CGI 2011-2012. I usually act as reviewer or referee for SIGGRAPH, EuroGraphics, ACM Transactions on Graphics, IEEE Visualization and Computer Graphics, NSERC, MITACS and NSF.

4. Delays in Research Activity There have.no significant delays.

5. Contributions to the Training of Highly Qualified Personnel (HQP)
I have recruited and supervised a large group of very capable students in the last six years. Several of these students have been awarded competitive scholarships. My students have received four NSERC undergraduate research awards, four NSERC PGS master, one NSERC CGS master, two NSERC PGS and two CGS Ph.D. scholarships. I try to directly involve my graduate students in research activities which usually results in high quality publications. Two of these publications have received a best paper award in this period. In summary, my students have been first author in fifteen published refereed journal papers, two chapters in research books and twenty published refereed conference papers during the last six years. I work closely with my graduate students, holding weekly individual, project-based and group meetings. In return, my graduate students often nominate me for supervision awards. I have been nominated for Graduate Student Association of University of Calgary for Graduate Supervision Excellence Award in March of 2006, 2007, and 2011. The department of Computer Science at the University of Calgary has also nominated me for an Outstanding Achievement in Supervision Award (Faculty of Graduate Studies' annual award) in 2009 and Killam Supervision Award 2011.

Natural Sciences and Engineering Research Council of Canada

Conseil de recherches en sciences naturelles et en génie du Canada

APPENDIX A
Personal Data
(Form 100)

Complete this appendix (i) if you are an applicant or co-applicant applying for the first time; (ii) if you need to update information submitted with a previous application; or (iii) if you do not hold an appointment at a Canadian postsecondary institution. For updates, include only the revised information in addition to the date, your name and your PIN.

This information will be used by NSERC primarily to contact applicants and award holders. It may also be used to identify prospective reviewers and committee members, and to generate statistics. It will not be seen or used in the adjudication process.

Date
2013/06/17

Family name	Given name	Initial(s) of all given names	Personal identification no. (PIN)
Samavati	Faramarz	F	**Valid** 253382

Position and complete mailing address if your primary place of employment is not a Canadian postsecondary institution or if your current mailing address is temporary	If address is temporary, indicate:
University of Calgary 2500 University Dr, NW Calgary AB T2N1N4 CANADA	Starting date Leaving date

Telephone number	Facsimile number	E-mail address
(403) 2109454	(403) 2844707	samavati@cpsc.ucalgary.ca

Telephone number (alternate)	Give an alternate telephone number only if you can be reached at that number during business hours.	Gender (completion optional)
(403) 2842345		X Male ☐ Female

LANGUAGE CAPABILITY

English	Read	X	Write	X	Speak	X
French	Read	☐	Write	☐	Speak	☐

I wish to receive my correspondence: in English X   in French ☐

AREA(S) OF EXPERTISE

Provide a maximum of 10 key words that describe your area(s) of expertise. Use commas to separate them. If you have expertise with particular instruments and techniques, specify which one(s).	Research subject code(s)
Geometric Modelling, Subdivision Surfaces and Multiresolution, Sketch-Based Modelling, Scientific Visualization, Animation, Image-based Modeling	Primary 2707 Secondary

Form 100, Appendix A (2009 W)   **PROTECTED WHEN COMPLETED**   Version française disponible

Canada

Appendix D (Form 100)
Consent to Provide Limited Personal Information About
Highly Qualified Personnel (HQP) to NSERC

NSERC applicants are required to describe their contributions to the training or supervision of highly qualified personnel (HQP) by providing certain details about the individuals they have trained or supervised during the six years prior to their current application. HQP information must be entered on the Personal Data Form (Form 100). This information includes the trainee's name, type of HQP training (e.g., undergraduate, master's, technical etc.) and status (completed, in-progress, incomplete), years supervised or co-supervised, title of the project or thesis, and the individual's present position.

Based on the federal *Privacy Act* rules governing the collection of personal information, applicants are asked to obtain consent from the individuals they have supervised before providing personal data about them to NSERC. In seeking this consent, the NSERC applicant must inform these individuals what data will be supplied, and assure them that it will only be used by NSERC for the purpose of assessing the applicant's contribution to HQP training. To reduce seeking consent for multiple applications, applicants will only need to seek consent one time for a six-year period. If the trainee provides consent by e-mail, the response must include confirmation that they have read and agree to the text of the consent form.

When consent cannot be obtained, applicants are asked to not provide names, or other combinations of data, that would identify those supervised. However, they may still provide the type of HQP training and status, years supervised or co-supervised, a general description of the project or thesis, and a general indication of the individual's present position if known.

An example of entering HQP information on Form 100 (with and without consent):

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Consent Received from Marie Roy				
Roy, Marie	Undergraduate (Completed)	Supervised 1994 - 1997	Isotope geochemistry in petroleum engineering	V-P (Research), Earth Analytics Inc., Calgary, Alberta
Consent Not Obtained from Marie Roy				
(name withheld)	Undergraduate (Completed)	Supervised 1994 - 1997	Isotope geochemistry	research executive in petroleum industry - western Canada

Consent Form

Name of Trainee

Applicant Information

Name   Samavati, Faramarz F

Department	Postsecondary Institution
Computer Science	Calgary

I hereby allow the above-named applicant to include limited personal data about me in grant applications submitted for consideration to NSERC for the next six years. This limited data will only include my name, type of HQP training and status, years supervised or co-supervised, title of the project or thesis and, to the best of the applicant's knowledge, my position title and company or organization at the time the application is submitted. I understand that NSERC will protect this data in accordance with the *Privacy Act*, and that it will only be used in processes that assess the applicant's contributions to the training of highly qualified personnel (HQP), including confidential peer review.

_____   _____
Trainee's signature   Date

Note: This form must be retained by the applicant and made available to NSERC upon request.