SFU

FACULTY OF COMMUNICATION, ART AND TECHNOLOGY

SCHOOL OF INTERACTIVE ARTS + TECHNOLOGY

**C**urriculum **V**itae

# Halil I. Erhan, PhD

Associate Professor of Interactive Systems and Design
Co-Director of Computational Design Lab

School of Interactive Arts and Technology
Simon Fraser University Surrey
250-13450 102 Ave.
Surrey, BC V3T 0A3
Office phone: +1 778 782 7423
e-mail: herhan [at] sfu.ca
www.sfu.ca/~herhan
www.computationaldesign.ca

## EDUCATION

**Carnegie Mellon University, Pittsburgh, PA**
***PhD in Computational Design, December 2003***

Dissertation Topic: Interactive Computational Support for Modeling and Generating Design Requirements.
Committee: Prof. Ulrich Flemming, PhD, Prof. Ömer Akin, PhD, Prof. John R. Hayes, PhD

**Clemson University, Clemson, SC**
***Master of Construction Science and Management, May 1996***

Thesis Topic: Three-dimensional computational modeling and integration as an alternative communication medium between different A/E/C disciplines.
Committee: Prof. Clarence L. B. Addison and Prof. Roger Liska, PhD

**Mimar Sinan University, Istanbul, Turkey**
***Master of Architecture, November 1993***

Completed course work

**Middle East Technical University, Ankara, Turkey**
***Bachelor of Architecture, June 1991***

Graduation Project: A modern art center in downtown Ankara, Turkey (Honors).

## ACADEMIC EXPERIENCE

**Associate Professor of Interactive Systems and Design (*September 2014 – Present*)**
*School of Interactive Arts and Technology, Simon Fraser University, BC Canada*

**Assistant Professor of Interactive Systems and Design (*September 2006 – September 2014*)**
*School of Interactive Arts and Technology, Simon Fraser University, BC Canada*

**Honorary International Chair Professor of Interactive Systems (*April 2013 – April 2014*)**
*National Taipei University of Technology*

**Assistant Professor of Software Engineering (*February 2003 – September 2006*)**
*College of Information Technology, UAE University, Al-Ain UAE*

**Course Instructor (2000-2003)**
**Teaching Assistant (1998-2000)**
*School of Architecture, Carnegie Mellon University, Pittsburgh PA*

**Research Assistant**
*Institute of Complex Engineered Systems, Carnegie Mellon University, Pittsburgh PA*

**Researcher (1994-2000)**
*Faculty of Architecture, Izmir Institute of Technology, Izmir Turkey*

## RESEARCH AND TEACHING INTERESTS

**Design:**

- Working with alternative design solutions in parallel
- Designing with complex requirements
- Designing and rapid prototyping of built-environments, interactive objects and systems

**Design Cognition:**

- Exploring models for and methodological approaches to the problem solving aspects of design cognition
- Studying the cognitive activities occurring during design problem specification and their evolution
- Exploring the role of symbolic design representation and manipulation media in design problem transformation from ill- to well-defined states
- Role of spatial thinking in design analysis, synthesis, and evaluation

**Computational Design:**

- Creativity Support Tools adopting mixed initiative approach to enable designers to create effective representations and exploration of solution space
- Interactive computational-design system architectures and algorithms for complex design domains
- Parametric design modeling and integration of non-spatial and spatial information
- Employing user-centered human-computer interaction paradigms in developing generative computational design tools
- Designing interactive systems to build knowledge repositories for design computation

**Teaching:**

- Improving and implementing 'Academic Apprenticeship Model' in design [computation] teaching
- Adopting student-centered, active and cooperative learning methods with digital-instruction approach
- Using innovative software engineering methods and strategic knowledge in teaching design computation

## PUBLICATIONS AND REPORTS – *(*Names in **BOLD** are my graduate students*)*

### JOURNAL PAPERS

**P1.** Erhan H., **N.H. Salmasi** and R.F. Woodbury (2010) ViSA: A Parametric Design Modeling Method to Enhance Visual Sensitivity Control and Analysis. International Journal of Architectural Computing, Special Issue, (pp. 461-483)

**P2.** Madkour, Y., O. Neumann and H. Erhan (2009) Programmatic Formation: Practical Applications of Parametric Design, International Journal of Architectural Computing vol. 7 - no. 4, (pp. 587-604)

**P3.** Flemming, U., H. Erhan**,** and I. Ozkaya (2004). Object-oriented application development in CAD: a graduate course, Automation in Construction, vol. 13-22, March 2004, (pp 147-158) Elsevier Science, NY. (also appeared in Association for Computer-Aided Design in Architecture Conference Proceedings 2002)

### MANUSCRIPTS AND BOOK CHAPTERS

**P4.** N. Gu, S. Watanabe, H. Erhan, H. Haeusler, R. Suso and W. Huang (eds.) (2014) Rethinking Comprehensive Design: Speculative Counterculture, Proceedings of the 19th International Conference of the Association of Computer-Aided Architectural Design Research in Asia CAADRIA 2014, Kyoto, JAPAN

**P5.** Woodbury, R., **S. Kolaric**, H. Erhan, J. Guenther (2013) Exploring for Designs: Five basic elements. In Armstrong R and Ferracina S (eds.) Unconventional Computing: Design methods for adaptive architecture, Riverside Architectural Press.

**P6.** Erhan H., B. Yousuf, and B. Berry (2012) Teaching Spatial Thinking in Design Computation Contexts: Challenges and Opportunities. In N. Gu, & X. Wang (Eds.), Computational Design Methods and Technologies: Applications in CAD, CAM and CAE Education (pp. 365-389). Hershey, PA: Information Science Reference.

**REFERRED ARCHIVAL CONFERENCE PAPERS**

P7. **Kolaric, S.**, R.F. Woodbury, H. Erhan (2014) CAMBRIA: A Tool for Managing Multiple Design Alternatives, WIP, In the Proceedings of the Designing Interactive Systems 2014, Vancouver Canada.

P8. **Sanchez, R.** and H. Erhan (2014) Design ReExplorer: Interactive Design Narratives for Feedback, Analysis and Exploration. In the Proceedings of 32nd Education and Research in Computer Aided Architectural Design in Europe Conference (10 pages)

P9. Erhan H., **I. Wang, N. Shireen** (2014) Interacting with Thousands: A Parametric-Space Exploration Method in Generative Design, Proceedings of the 34th Annual Conference of the Association for Computer Aided Design in Architecture, United States, California, Los Angeles (11 pages)

P10. Erhan, H., **A. Huang**, R.F. Woodbury (2014) DiNa Framework and Prototype to Support Collaboration in the Wild. In the Proceedings of the International Conference on Computer Aided Architectural Design Research in Asia, Kyoto Japan (10 pages).

P11. Tuker, C. and H. Erhan (2014) An Architectural Modeling Method for Game Environments and Visualization. In the Proceedings of the International Conference on Computer Aided Architectural Design Research in Asia, Kyoto Japan (10 pages).

P12. Kamel H.M and H. Erhan (2013) WebSight: The Use of the Grid-Based Interface to Convey Layout of Web-Pages in a Non-Visual Environment, Proceedings of 15th International Conference on Human-Computer Interaction, Las Vegas USA (10 pages)

P13. Erhan H., D. Botta, **A. Huang**, R.F. Woodbury (2013) Peripheral Tools to Support Collaboration: Probing to Design Collaboration through Role Playing, in R. Stouffs et al. (eds.), Proceedings of the 18th International Conference of the Association of Computer-Aided Architectural Design Research in Asia, Singapore (pp. 241-250).

P14. **Abukhodair, F**., B.E. Riecke, H. Erhan, C.D. Shaw (2013) Does interactivity improve exploratory data analysis of animated trend visualizations? Proceedings of SPIE-IS and T. Electronic Imaging, Visualization and Data Analysis 2013, (11 pages).

P15. Erhan, H., **R. Sanchez**, R.F. Woodbury, V. Muller, M. Smith (2012) Visual Narratives of Parametric Design History: Aha! Now I see how you did it!, in Proceedings of the 30th International Conference on Education and Research in Computer Aided Architectural Design in Europe, Prague Czech Republic (pp. 259-268).

P16. **Shireen, N.,** H. Erhan, D. Botta, and R.F. Woodbury (2012) Parallel Development of Parametric Design Models Using Subjunctive Dependency Graphs, in Proceedings of the 30th Annual Conference of the Association for Computer Aided Design in Architecture, San Francisco, California (14 pages, 21% Acceptance rate).

P17. **Al-Saati, M.Z**., D. Botta, R. Woodbury, H. Erhan, and M. Seif El-Nasr (2012) Moving in Filmic Spaces: Relating Camera Movements to Spatial Archetypes in Architectural Animations, in Proceedings of CAADRIA2012: the 17th International Conference on Computer Aided Architectural Design (pp. 629–636 – note: author names are missing in the publication listing).

P18. **Shireen, N.,** H. Erhan, **R. Sanchez**, **J. Popovich**, R.F. Woodbury, and B.E. Riecke (2011) Design Space Exploration in Parametric System: Analyzing Effects of Goal Specificity and Method Specificity on Design Solutions. In Proceedings of the 8th ACM Conference on Creativity and Cognition, Atlanta, Georgia. (pp 249-258).

P19. **Nasirova, D.,** H. Erhan, R.F. Woodbury, and B. E. Riecke (2011) Change Detection in 3D Parametric Systems: Human-Centered Interfaces for Change Visualization. In Proceedings of 14th International Conference on Computer Aided Architectural Design Futures, CAAD Futures, Belgium, (pp. 751–764).

P20. **Huang, A.,** H. Erhan, R.F. Woodbury, K. Kazlova, and D. Botta (2011) Collaboration Workflow Simplified: Reduction of Device Overhead for Integrated Design Collaboration. In Proceedings of 14th International Conference on Computer Aided Architectural Design Futures CAAD Futures, Belgium, (pp. 591–601).

P21. **Kolarić, S.,** H. Erhan, R. Woodbury, and B. E. Riecke (2010) Comprehending parametric CAD models: an evaluation of two graphical user interfaces. In Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries (NordiCHI '10). ACM, New York, NY, (pp. 707-710)

P22. **Rajus, V.S**., R. Woodbury, H. Erhan, R. E. Riecke, and V. Mueller (2010) Collaboration in Parametric Design: Analyzing User Interaction during Information Sharing. In Proceedings of the 30th Annual Conference of the Association for Computer Aided Design in Architecture, ACADIA 2010: LIFE in:formation, On Responsive Information and Variations in Architecture, New York, NY, (pp. 320-330)

P23. Erhan, H., R. Woodbury and **N.H. Salmasi** (2009) Visual sensitivity analysis of parametric design models: Improving agility in design. In Proceedings of T. Tidafi and T. Dorta (eds) Joining Languages, Cultures and Visions: CAAD Futures 2009, PUM, 2009, (pp. 815- 829)

P24. Erhan, H., B. Ben Youssef, M. Sjoerdsma, J. Dill, B. Berry, J. McCracken (2008) Spatial Thinking and Communicating: A Course for First-Year University Students. In Proceedings of the Canadian Engineering Education Association 2008, CDEN 2008 Conference, Halifax, Nova Scotia. (10 pages)

P25. Erhan, H. and F. Djebbar (2007) Pair-Collaborated Usability Study of RaBBiT in Requirements Modeling and Generation. In Proceedings of the 12th International Conference on Computer Aided Architectural Design Research in Asia, Nanjing (China) 19-21 April 2007, (pp. 399-409) (Received Best Presentation Award among 87 papers)

P26. Erhan, H. (2006) Learning from Masters: Academic Apprenticeship Model for Computational Design Courses. In Proceedings of the 11th International Conference on Computer Aided Architectural Design Research in Asia, CAADRIA 2006 Kumamoto, Japan March 30th - April 2nd 2006, (pp. 53-61)

P27. Erhan, H. and U. Flemming (2005) User-System Interaction Design for Requirements Modeling, CAADRIA 2005. In Proceedings of the 10th International Conference on Computer Aided Architectural Design Research in Asia / ISBN 89- 7141-648-3] New Delhi (India) 28-30 April 2005, vol. 2, (pp. 160-170) (Received Best Paper Award among 96 papers)

P28. Erhan, H., and U. Flemming (2004) Interactive Support for Modeling and Generating Building Design Requirements. Generative CAD 2004 Symposium Proceedings. Pittsburgh, PA.

P29. Erhan, H. (2004) Anatomy of RaBBiT: An Approach for User-System Interaction Design for Requirements Modeling. Generative CAD 2004 Symposium Workshops. Carnegie Mellon University, Pittsburgh, PA.

**OTHER ARCHIVAL WORK**

P30. **Shireen N.,** H. Erhan, R. Woodbury (2013) Exploring Representations of Parallel Development of Parametric Design Models, GRAND 2013, Toronto, Canada. (Poster)

P31. R. Woodbury, **S. Kolaric**, H. Erhan, J. Guenther (2013) Design Exploration and Configuration Management: Two Sides of the Same Coin?, COFES conference, Scottsdale, AZ, US. (Poster)

P32. **Kolaric, S.,** R. Woodbury, H. Erhan (2012) CAMBRIA: Set-based Interaction in Design Space Exploration, GRAND Conference, Montreal, QC (Poster)

P33. **Kolaric S.**, H. Erhan, and R.F. Woodbury (2011) Complex Floor Plans: How to Represent Them, and Interact With Them?, Poster, GRAND conference. (Poster)

P34. Erhan, H., B. Ben Youssef, M. Sjoerdsma, J. Dill, B. Berry, J. McCracken (2009) Engaged Faculty Yields Engaged Students. The 35th National Teaching and Learning Conference: First Year in Focus: Engaging Students in their First Year and Beyond Conference, Simon Fraser University, Burnaby BC. (Extended Abstract)

P35. Erhan, H. and F. Djebbar (2006) Effectiveness of RaBBiT in Requirements Modeling and Generation. The Seventh Annual U.A.E. University (Internal Research Report).

P36. Flemming, U., H. Erhan, I. Ozkaya. (2001) Object-Oriented Application Development in CAD: A Graduate Course. Technical Report 48-01-01. Pittsburgh, PA: Carnegie Mellon University, Institute of Complex Engineered Systems.

P37. Flemming et al. (1999), The SEED Experience. Technical Report 48-06-00: Pittsburgh, PA: Carnegie Mellon University, Institute of Complex Engineered Systems.

P38. Erhan, H. (1999) Usability Test of SEED-Pro II: Pluralistic-Heuristic Walk-through Method. Technical Report: Institute of Complex Engineered Systems. Carnegie Mellon University.

### NON-REFEREED PUBLICATIONS

**P39.** Nasirova, Diliara (2012) Enhancing Change Detection and Model Comprehension in Parametric Design, MSc Thesis, SIAT Simon Fraser University (Prof. R. Woodbury as co-supervisor)

**P40.** Huang, Andy (2012) DiNA Framework: Supporting Collaboration in the Wild, MSc Thesis, SIAT Simon Fraser University (Prof. R. Woodbury as co-supervisor)

**P41.** Salmasi, Nahal (2010) Visual Sensitivity Analysis of Parametric Design Models: Improving Agility in Design, SIAT Simon Fraser University (Prof. R. Woodbury as co-supervisor)

**P42.** Roham, Mehdi Sheikholeslami (2009) You Can Get More Than You Make, MSc Thesis, SIAT Simon Fraser University (Prof. R. Woodbury as senior supervisor)

**P43.** Warren, P., A. Barbour, G. Ditsa, G., and H. Erhan (2006) The Interaction of Cognitive and Social Dimensions in the Understanding of Computer Programming and Programming Languages. The 7th Annual U.A.E. University Research Report, Al-Ain United Arab Emirates

**P44.** Erhan, H. and F. Djebbar (2006) Effectiveness of RaBBiT in Requirements Modeling and Generation. The 7th Annual U.A.E. University Research Report, Al-Ain United Arab Emirates

**P45.** Erhan, H.I. (2003) Interactive Computational Support for Modeling and Generating Design Requirements. PhD Thesis; Computational Design, School of Architecture and Institute of Complex Engineered Systems, Carnegie Mellon University, Pittsburgh, PA.

**P46.** Erhan, H.I. (1996) Three-dimensional computational modeling and integration as an alternative communication medium between different A/E/C disciplines. Master's Thesis, Clemson University, Clemson, SC.

### PAPERS SUBMITTED

**P47.** Erhan, H.I., I. Wang, and N. Shireen (2014-Under Review) Harnessing Design Space: A Similarity-Based Exploration Method for Generative Design, Design Agency Special Issue, International Journal of Architectural Computing Spring 2015 (19 pages).

## RESEARCH APPLICATIONS DEVELOPED

**A1. CAMBRIA: Design exploration by working alternatives in parallel (as part of S. Kolaric's thesis)**
*Platform: PC* *Programming Language: C++*
CAMBRIA is an interactive system that demonstrates a path to directly working with collection of alternatives. The key principles behind it are: (a) view many alternatives at once, (b) edit alternatives in ad-hoc groups, and (c) maintain identity of parts across alternatives. We add two basic operations: pass variable where a variable in one alternative can be copied to another maintaining its identity; and pass value: the value of a variable can be passed to another alternative having the same variable. Composing these two operations produces several user-level commands such as clone (pass all variables from one alternative to others), parallel edit (edit one alternative; simultaneously pass variables and values to others). The prototype is still under development.

**A2. Time Travel in Parametric CAD: Design ReExplorer (as part of Rodolfo Sanchez's thesis)**
*Platform: PC* *Programming Language: Processing, Java, and RhinoScript*
A system enables designers to visit previously made decision in design modeling using parametric CAD software, and presents opportunities for controlling backtracking, deferring, and their combinations. The project received funding from AeroInfo (a Boeing Campany) and MITACS.

**A3. Change Detection and Control in Parametric CAD (as part of D. Nasirova's thesis)**
*Platform: PC, Generative Components* *Programming Language: ActionScript and GCScript*
A high-fidelity prototype demonstrates a set of debugging-like interaction techniques (watch, trace, inspect, probe etc.) on data flow graph interfaces to assist with change detection and model comprehension by enabling designers to identify data flow effects, parametric dependencies, and changes.

**A4. DiNA: Enabling least effort principle in design collaboration (as part of A. Huang's thesis)**
*Platform: HTML 5 compatible browsers* *Programming language: Php, SQL, Html 5, JavaScript*
DiNA demonstrates basic use cases necessary for sharing information by the help of readily available devices; browsing information using flexible classification,, clustering, and annotation mechanisms defined by users and in users' terms.

**A5. RaBBiT: Requirements Building for Building Types, (Alpha Spring 2004 – In Progress)**
*Platform: Platform independent* *Programming language: Java and OPSJ*
RaBBiT is a prototype application that has been proposed as a proof-of-concept of my Ph.D. thesis. Its primary function is to ***facilitate design requirements specification in design.*** The proposed features of the RaBBiT are the following: (a) the ability to **computationally capture reusable programming knowledge** of building types based on a set of concepts that are general enough to accommodate various programming styles while remaining operational; (b) **simplification of the designer- computer interaction** to make the application usable, even programmable to a degree, for non-computer programmers; and (c) ability to **generate design requirements** as output that can be used by different generative design and decision support tools. The prototype of RaBBiT is a hybrid software system consisting of an object-oriented application that is highly integrated with a rule-based reasoning system and a direct- manipulation style user interface. (*www.sfu.ca/~herhan/rabbit_help.htm*)

**A6. ReXT: Requirement Extractor, Spring 2003**
*Platform: Bentley's ProjectBank and MicroStation/J.* *Programming Language: JMDL and Java.*
ReXT has been proposed to assist designers in ***interactively capturing functional and spatial information*** from existing CAD drawings of buildings. This information is part of the building design requirements that evolve and change from their initial forms in the design process. Most of these changes result in modification of the design and are embedded in evolving spatial configurations. Rext enables users to identify visible design components from the CAD drawings and convert them to design requirements, which then can be automatically compared with the initial design requirements and used for evaluating intended vs. current state of a design.

**A7. HVAC Tools, Fall 2001**
*CAD Platform: Bentley's ProjectBank and MicroStation/J.* *Programming Language: JMDL and Java.*
HVAC Tools partially automates a very time-consuming task, the ***generation of scaled drawings of mechanical systems*** from highly abstracted and symbolic single-line drawings as HVAC consultants typically supply them. By using HVAC Tools, an architect identifies the elements that describe the HVAC system components in a CAD drawing. Based on this information, the application generates an initial version of the desired drawing as a CAD file, depicting the HVAC components in their true shapes. From the created model, a list of components and their specs can also be produced.

**A8. Remodeler, Fall 2000**
*CAD Platform: Bentley's ProjectBank and MicroStation/J.* *Programming Language: JMDL and Java.*
Supports the generation of design documents for remodeling projects through ***collaboration of multiple users.*** An initial set of CAD files describing the as-built state of a facility are collected in a ProjectBank project. Any designer involved in the project is able to *u*se Remodeler to identify parts to be *removed, demolished, added, and recycled*. Remodeler builds internally a record of these elements from which drawings, schedules, specs and preliminary cost estimates can be automatically produced.

## FUNDED RESEARCH

**Interfaces for Exploring Design through Multiple and Parallel Alternatives in Parametric CAD — PI**
*NSERC Bridging Grant, Simon Fraser University, Spring 2013 (CAD 15,000)*
Aims to enhance design by understanding the design process and offering computational solutions to support design space exploration. Designers explore alternative solutions (or simply, alternatives). They display distinct patterns of exploration, chief of which are parallel development, history revision, and solution fusion. I propose a computational design solution to enable these three patterns and workflow among them. This proposal seeks funding to support further development and evaluation of CAMBRIA (cf. Research Applications Developed section in this CV).

**Interactive Visualization of Design Stories for Parametric Design Systems — PI**
*AeroInfo Systems (A Boeing Company) and MITACS, Fall 2012 (CAD 15,000)*
Focus on developing tools to enable use of interactive records of the parametric CAD (PCAD) design process as 'design stories'. Design stories stem from a desire to go beyond a descriptive and error recovery model of history to a platform for understanding the past and extending the exploratory capabilities of parametric CAD. That is, to gain insight by visualizing the design patterns, strategies and individual actions that come before and after the designers' accomplishments and failings across the design process and then use these as launching points for further exploration.

**Interactive Systems for Visualization-Driven [Design] Decision-Making – PI**
*Boeing Visual Analytics Center and MITACS, Fall 2010 (CAD 20,000)*
Aims to utilize decision-making theories emphasizing visual cognition in order to describe the general pattern of design-task performance by individuals and groups. The research adapts or develops visual representations and interactions that are suitable for accessing to, presenting, interacting with, and editing different types of complex design content; and to conform the relevancy to practice, for example in architectural design. The developed prototypes of computational decision-support tools will adopt the models extended and the visual analytics techniques developed. The outcome is expected to provide a theoretical ground for extending existing models that exploit human-visual system for rapid insight informing design actions. The tools will be used to verify the models and techniques; therefore a corollary to this objective is to conduct experiments involving designers working on the prototype software, which can be implemented as part of or complementary to the tools in use–such as parametric systems.

**Enabling Technologies for CAD Systems – Collaborating Investigator**
*GRAND NCE, Project Lead: Dr. Wolfgang Stuerzlinger, 2009-2014 (CAD 18,000 per year)*
Project conducted by different researchers from different institutions in Canada. It focuses on systems for [design] histories and alternatives, enabling the known problem solving strategy of problem space exploration. We plan to research systems that enable the user to browse and manipulate significant steps of a designs history, revisiting and evaluating earlier design decisions. We will thus develop powerful mechanisms for design re-use, and communication of the design to stakeholders, and documenting the design process. Another focus is on simpler user interfaces for modeling. Constraints and simulation establish a new design space, in which histories and alternative enhance the ability to explore new alternatives for new designs. The third enables rapid, interactive exploration of the design space, which is essential to match all desired outcomes.

**Parametric Design Research and Application – Researcher (Prof. Rob Woodbury as PI)**
*Bentley Systems Inc., NSERC CRD and MITACS AC, Fall 2009 (CAD 114,450 out of 200,000 allocated)*
The research lead by Dr. Woodbury investigates parametric design and systems in the context of design. Three main focus areas are: (a) Design process visualization and communication, (b) Rule-based generation of design, and (c) Software patterns for parametric design. The research aims at improvements in several aspects of GenerativeComponents and at new knowledge of algorithms and interfaces.

**Use of interactive systems: Exploring Level of Satisfaction with Design — PI**
*Funded by Simon Fraser University, President's Research Grant (CAD 10,000), Fall 2007*
Proposes to investigate designer satisfaction with generated alternatives as a function of available interactive design-support tools (such as CAD systems). In specific, the studies the relationship between the designers' level of satisfaction and the alternative design solutions generated with design-support tools to learn how this satisfaction level is influenced by the time spent, the number and sequence of alternatives; and the role of visualization or graphic diagrams in producing satisfying solutions. This study extended a previous study of designer satisfaction that the PI conducted with the peers in the Design Computation program at Carnegie Mellon University.

**Requirements Management and Computational Design Support in Architectural Programming — PI**
*Funded by Simon Fraser University and SIAT (CAD 60,000)*
Proposes to continue research on developing design-computation support for integrating architectural design activities including design requirements and specifications. Explores software models and interaction techniques that seamlessly combine two different but highly related phases in architectural design through digital objects and interaction between these objects.

**Learning from Masters: Academic Apprenticeship Model for Computational Design Courses — PI**
*Funded by UAE University Research Affairs. 2005. (AED 12,000)*

Studied "design studios" and "active and collaborative learning" in science and engineering design education. A proposed model based on 'social-constructivist paradigm' is presented for the courses covering problem solving through computation. In this model, the "design studio" method is used for structuring the physical classroom environment and defining an interaction model between students and instructors as well as between students. The model is named "Academic Apprenticeship Model" and fundamentally is a reinterpretation of 'apprenticeship' in an educational environment.

**A Usability Study on RaBBiT: Effectiveness in Requirements Knowledge Modeling and Generation for Complex Design Domains — PI**
*Funded by UAE University Research Affairs. 2004 (AED 9,500)*

**RaBBiT** is a tool for design requirements modeling and generation that I developed as part of my PhD studies. Before the first release of RaBBiT, its effectiveness and efficiency from the perspective of human-computer interaction should be verified. This research proposal focuses particularly on this verification through (a) **measuring the usefulness** of RaBBiT and its effectiveness in requirements modeling and generation, (b) **assessing the usability** of RaBBiT applying heuristic evaluation methods for user-interfaces. These two focus areas are highly-coupled; usefulness depends on high-usability and usability can't be achieved without a goal at hand.

**The interaction of cognitive and social dimensions in the understanding of computer programming and programming languages — Co-PI**
*Funded by UAE University Research Affairs, Peter Warren as PI. 2004 (AED 12,000)*

Teaching and learning programming languages is a social activity influenced by cultural norms. Therefore, considering only functional approaches to teaching programming are not sufficient; the socio-cultural aspects are equally important and need special attention. We questioned how groups of people come to learn; to what extent languages support the way people think and interact with one another; and how these change the way programming languages are thought of and constructed. This research project builds on **HCI** research and **minimalist principles,** which supports the understanding of **the process of programming and learning to program**.

**Parallel RTL Simulation Engine — Co-PI**
*Funded by UAE University Research Affairs, with A. Elchouemi as PI. 2004, (AED 14,000)*

We intend to investigate the optimization techniques for parallel Resistor Transistor Logic simulation engines. A novel net-list partitioning technique is proposed incorporating different optimization models for task assignments. Our main objective is to **develop an interactive prototype system for parallel RTL simulation** that will employ the new partitioning technique for microprocessor design.

## PRESENTATIONS

Presenter: "Interacting with Thousands: A Parametric-Space Exploration Method in Generative Design", ACADIA 2014, October 25, 2014, Los Angeles, CA.

Presenter: "*Design ReExplorer: Interactive Visualization of Design Narratives*", CANVAC ViVA Visual Analytic, December 4, 2013, Vancouver BC

Invited Speaker: "*A Researcher's Perspective to Computation and Design*", Perkins+Will Architects, April 5, 2013, Vancouver BC

Presenter: "*Design: Research Perspective*", SIAT, Simon Fraser University, Graduate Student Colloquium February 24, 2013, Vancouver BC

Presenter: "*A Proposal for Building Time Machine for CAD*", Boeing AeroInfo Visual Analytics Research, April 27, 2012, Vancouver BC

Panel Speaker: "*The Role of Design in Computer Science*", University of British Columbia, Computer Science Department, March 27, 2009, Vancouver BC

Presenter: "Visual Sensitivity Analysis of Parametric Design Models: Improving Agility in Design", CAADFutures 2009, June 17-20, 2009 U. of Montreal

Presenter: "*Engaged Faculty Yields Engaged Students*.", First Year In Focus Conference, Simon Fraser Univeristy, May 12-14, 2009, Burnaby BC

**Keynote Speaker**: "*Designing a Context in a Context: Understanding What The Cattle Call is About?*", 2007 International Digital-Context Innovation Design Workshop, Conference & Joint Exhibition, NYUT, Taiwan, September 26 - October 5, 2007, Taiwan

Invited Speaker: "*From conception to making of RaBBiT: Is it fun to design systems?*", National Yunlin University of Technology, Taiwan, September 2007, Taiwan

Invited Speaker: "*Requirements Modeling in System Design*", Simon Fraser University, , February 2005

Presenter: "*RaBBiT for Programming Civic Facilities*" International Environment Conference & Exhibition 2005, Abu-Dhabi. Presented, Certificate of Recognition

Presenter: "*RaBBiT for Planning and Designing Military Facilities*", 7th International Defense Exhibition and Conference 2005, Abu-Dhabi. Certificate of Recognition

Presenter: "Research Opportunities Panel: Computational Support for Planning Abu Dhabi National Oil Company (ADNOC) Projects" faculty.uaeu.ac.ae/~hierhan/Rabbit/ RabbitPoster.jpg, 2005

Invited Speaker: "*Design Requirements Modeling and Computational Support*". Distinguished Lecture Series, UAE University Fall 2004

Speaker: "*Active Learning: Problem- to Project-based Learning Techniques*", UAE University 2004 (with A. Jaffar and A. Elchueami)

Speaker: "*Case Studies: Programming Recurring Building Types*", School of Architecture Colloquium Series, Carnegie Mellon University, 2002

Speaker: "*Usability Evaluation of SEED-Pro II*", Colloquium Series, Carnegie Mellon University, 2000

## WORKSHOPS LEAD AND ORGANIZED

Interaction Design Workshop, March 2013, NUTT, Taiwan [Invited to work with faculty and graduate students in developing various interactive installations, games, and social media applications one of which was 'Bionic Orchid' selected for YOUNG Design Competition 2013]

International Digital-Context Innovation Design Workshop, October 2007, NYUT, Taiwan [Invited as an advisor for two teams – Teams won **Best Project Award** and **Best Technology Award**], Fall 2007

## TEACHING EXPERIENCE

**Assistant Professor of Interactive Systems and Design (*September 2006 – Present*)**
*Faculty of Communication, Art, and Technology, Simon Fraser University Surrey*

**IAT-432: Design Evaluation (3 Credits) – Instructor**
*Fall 2014 – 37;*
Examines evaluation concepts and methods for designers. Introduces a range of evaluation approaches including informal usability studies, lab experiments, field studies, and analytically based evaluations. Students explore techniques for feedback including usability tests, observation, interviews, heuristic reviews, and discursive evaluations. Underlying concepts of evaluation including scientific experimentation, ethnography, phenomenology, and aesthetics will be discussed. Students will learn how to design and implement appropriate evaluation studies for a range of design projects.

**IAT-403|405: Design Studio I and II, Capstone Project (3 Credits each) —Instructor, Coordinator**
*†Fall 2012 – 15; Spring 2013 – 14; Fall 2013 – 1; Spring 2014 – 1*
Focuses on the design, implementation and communication of a media arts, design or interactive systems project (or any combination of these) and is the senior capstone project for SIAT students. Teams of 3-4 students or individual students undertake a two-semesters long project.

**IAT-846 (previously IAT-882): Interactive Systems for Design (3 Credits) — Developer, Instructor**
*Spring 2007 - 4; Spring 2009 – 2; Spring 2010 – 6; Fall 2011 – 11, Spring 2014 – 3*
Explores connections between use and creation of interactive design systems by bridging design and software development domains and building conceptual and practical knowledge. In the context of a project, problem-solving perspective to design as well as to systems development is applied for analyzing and formulating design problems at the task-level; and developing and evaluating systems as solutions.

† <Term> <Year> – <Enrolled number of students>

**IAT-437 (IAT-337): Representation and Fabrication (3 Credits) — Developer, Instructor**

*Spring 2008 - 65; Spring 2009 – 94; Fall 2010 - 74; Summer 2011 - 74; Fall 2012 – 67; Spring 2013 – 60; Spring 2014 – 65; Fall 2014 – 8; Spring 2015 – 17.*

[Fall 2014 became a fourth year course IAT437, capacity limited to 40 students]

[Spring 2013 student project won Best Poster Award in SIAT Showcase]

[Spring 2012 student project won FCAT Border Crossing Award]

[Fall 2011 student project nominated as finalist in Surrey City Awards Competition]

[Fall 2011 student projects won Best Design Project Award in Spring Showcase]

[Fall 2010 student project won Best Science and Technology Award in SIAT Showcase]

Introduces to advanced computer tools for representing designs and to the techniques needed to use such tools for accurate and precise specification. It teaches how to use data from such representations as input to computer numerical control fabrication equipment (such as laser cutters, 3D printers and n-axis mills) and combine representation and fabrication into an iterative design process. Designing family of artifacts provides a context in which issues of reuse, design rules and inter-design coherence are crucial.

**IAT-452: Developing Design Tools (Design Environments in 2006) (3 Credits) — Developer, Instructor**

*Fall 2006 - 9; Fall 2007 - 36; Fall 2008 - 14; Fall 2009 - 10; Spring 2011 - 19; Spring 2012 - 17; Spring 2014 – 18; Spring 2015 – 16.*

Introduces approaches to customizing and developing software applications as design-support tools to be employed in dynamic design environments comprising people, other tools, and their interactions in relation to the tasks to be performed. Discusses effective strategies for software development to find the best matching solutions for a given situation and applies the select methods in software design, prototyping, and evaluation. Makes use of software development processes, languages, and notations in representing design of the tools.

**IAT-487-1: Directed Studies – Developer, Instructor**

*Spring 2010 – 3; Summer 2013 – 1; Fall 2013 – 1; Spring 2014 – 1*

[Students were accepted to M. of Arch at U. of Calgary, U. of British Columbia after the study]

The study aims at forming a foundational knowledge and skills for 'architectural design practice' using computational design and rapid prototyping. The students work collaboratively to explore digital design issues that govern today's architectural design practice. The spectrum of activities focuses on gathering and structuring non-spatial and spatial design information; using the structured information in design exploration; rapid prototyping for agile design; and evaluation of design outcomes. The students taking this directed study show interest for applying for architectural schools. The course will build a portfolio to support future studies.

**Tech-106: Spatial Thinking and Communicating (3 Credits) — Developer, Instructor**

*Fall 2007 (with John Dill, Ben Youssef, Mike Sjoerdsma) - 340; Fall 2010 (with John Dill) 120*

[Fall 2010 students won Best Undergrad Project Award in SIAT Spring Showcase, 2011]

Introduces spatial thinking, graphical representation and communication. As a foundations course, it aims to expose students to spatial thinking concepts and to provide them with the basic knowledge and technical skills required to envision three dimensional structures, visualize and think in three dimensions and to analyze and solve specific spatial thinking problems using sketching, digital and physical modeling.

**Assistant Professor of Software Engineering (2003 – 2006)**

*College of Information Technology, UAE University*

**ITBP-220: Programming II — Instructor**

*Spring 2004 - 90*

Covers abstract data types and structures as well as their applications. Presents the methods and models used in software design and development. Includes an overview of modularity, reusability, version tracking, and object-oriented design.

**ITBP-320: Programming III — Coordinator, Instructor**

*Fall 2004 –120 enrolled; Fall 2005 – 120*

Introduces tools and methods for developing moderate to large size programs. Focuses on object-oriented design, specification, and implementation; data and file structures; recursion; problem solving.

**SWEB-311: Software Requirements Management — Coordinator, Instructor**

*Spring 2004 – 18; Spring 2005 – 23*

Introduces to the fundamental concepts and methods used in managing software requirements modeling in software lifecycle.

**SWEB-316: Software Design II — Instructor**

*Spring 2006 – 28*

Presents concepts and methods for modeling architectural design of large-scale software systems. Uses design concepts and notations.

**SWEB-318: User Interface Design — Coordinator, Developer, Instructor**

*Spring 2005 – 24*

Focuses on the relationship of the software system with its environment and in particular with the people who interact with the system through user interfaces, which their design is central to their success.

**SWEB-446: Web-based Software — Coordinator, Developer, Instructor**

*Fall 2004, Fall 2005*

Introduces theoretical and practical issues in the specification, design and construction of software systems that run on the web. Discusses software construction models, languages, and technologies.

**SWEB-490: Senior Software Engineering Exhibition (Graduation Project) — Coordinator, Developer**

*Spring 2005*

Aims to improve the students' knowledge, skill, and ability to complete a given project with valid theoretical and practical justifications in the Information Technology.

**SWEB-XXX: Student Advisor of Software Engineering Program**

*Spring 2005, Fall 2005, Spring 2006*

Advise students in selection their courses and help them in their career decisions.

**Instructor (2000-2003)**

*School of Architecture Carnegie Mellon University*

**Object-oriented Application Development in CAD – Co-developer, Instructor**

*Fall 2000, Fall 2001, and Spring 2003.*

Introduces graduate students to effective and innovative object-oriented software development strategies and to application development in computational design by emphasizing the importance of strategic knowledge. Students and instructor form a development team to create interesting research prototypes.

**Teaching Assistant**

*School of Architecture Carnegie Mellon University*

**Architectural Design Studio: IV Year**

*Spring 1998 and Fall 2002*

Instructing and guiding students to design buildings with complex programs. The project was an interdisciplinary university library with a high technology media center to be built on the campus. The program was compiled by the students under my supervision.

**Computer Modeling II**

*Spring 1999 and Spring 2000*

Teaching students how to effectively use modeling applications in design process and design presentation (MicroStation and FormZ applications were used). In addition, model manipulation concepts such as transformation, translation, rotation, reflection etc. were explained as strategic tools in different contexts.

## STUDENT ADVISING

**Senior Supervisor**

| Student Name | | Study title | Start | End |
|---|---|---|---|---|
| Koloric, Sinisa | PhD | CAMBRIA: An Interactive System to Enable Working with Alternatives in Collections and Editing Parallel | Fall 2009 | Spring 2015 Scheduled |
| Shireen, Naghmi | PhD | Design Space Exploration in Parametric Design | Fall 2010 | Active |
| Sanchez, Rodolfo | MSc | Interfaces for Transactions History in Parametric Design Tools: A Time Machine for Design | Fall 2010 | Fall 2014 |

| | | | | |
|---|---|---|---|---|
| Popovich, Jelena | MSc | Alternatives on the wall: Working with large number of alternative design solutions | Fall 2010 | Dropped off |
| Wang, Ivy | MSc | Expertise in Design Decision-Making When Working with Alternatives | Fall 2011 | Spring 2015 Scheduled |
| Nazarova, Dilara | MSc | Enhancing Change Detection and Model Comprehension in Parametric Design Systems | Fall 2009 | Fall 2012 |
| Huang, Andy | MSc | DiNa Framework: Supporting (Design) Collaboration in the Wild | Fall 2009 | Fall 2012 |
| **Co-Supervisor** | | | | |
| Salmasi, Nahal | MSc | Visual Sensitivity Analysis of Parametric Design Models: Improving Agility in Design (with Dr. Woodbury) | Spring 2007 | Spring 2010 |
| Sheikholeslami, Roham | MSc | You Can Get More Than You Make: A Novel Approach to Design Space Exploration (with Dr. Woodbury) | Fall 2007 | Spring 2009 |
| **Committee Member** | | | | |
| Al-Saati, Maha | PhD | The Mythical Architectural Image: Constructing Spatial Drama in the Moving Architectural Image (with Dr. Woodbury) | Fall 2007 | Summer 2013 |
| Mokhtarmaleki, Maryam | PhD | Programming in the Model (Tentative) (with Dr. Woodbury) | Spring 2009 | Fall 2014 |
| Abukhodair, Felwa | PhD | Visual Analytics in Emergency Health Records (with Dr. Shaw) | Fall 2010 | Active |
| Green, Tera | PhD | Visual Analytics and Perception (Tentative) (with Dr. Fisher) | Fall 2010 | Active |
| Eap, Tye Mey | PhD | Web-services for user authentication (with Dr. Hatala) | Fall 2006 | Active |
| Kazlova, Karine | PhD | Computational Methods of Collaboration (with Dr. Bartram) | Fall 2007 | Active |
| Hosseini, Malahat | MA | The Utility of Role Playing Method in Design Ideation (with Dr. Wakkary) | Fall 2006 | Spring 2009 |
| Freiberg, Jacob | MSc | Spatial cognition and VR in Design (with Dr. Riecke) | Fall 2012 | Active |
| **External Examiner - SFU** | | | | |
| Mohabbati, Bardia | PhD | Quality-aware Service-Oriented Software Product Lines: Feature-Driven Process Configuration and Optimization (Dr. Hatala) | Thesis | Fall 2013 |
| Guenther, Jeffrey | PhD | Visual Analytics Language: Shiro (Dr. Shaw) | Qualifier | Summer 2013 |
| Alimadadi J., Saba | MSc | Propagation of Chance and Visualization of Causality in Dependency Structures (Dr. Shaw) | Thesis | Spring 2013 |
| Lavender, Terry | PhD | Serious Games and Immersive VR | Qualifier | Summer 2013 |
| Zeinaly B, Mahshid | MSc | Visualizing Mutations of a Virus Sequence (Dr. Shaw) | Thesis | Fall 2012 |
| Asadi, Mohsen | PhD | Software Product Line Modeling (Dr. Hatala) | Qualifier | Summer 2011 |
| Sheidaei, Shahin | MSc | Policy Conflict Detection of Using Alloy: An Explorative Study (Dr. Hatala) | Thesis | Spring 2010 |
| Mohabbati, Bardia | PhD | Service-Oriented Computing and Software Product Lines: Merging two Approaches for Extensible Service Design (Dr. Hatala) | Qualifier | Fall 2010 |
| Qian, Cheryl | PhD | Design Patterns: Augmenting Design Practice in | Thesis | Summer 2009 |

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|---|---|---|---|---|
| | | Parametric Systems (Dr. Woodbury) | | |
| Qui, Zhu | MSc | The Blue Bubble: Design and Construction of an Interpersonal Communicator (Dr. Bowes) | Thesis | Spring 2008 |
| Rao, Shilpi | MSc | MICE: Tracing Programmer and Correcting Their Programming Style (Dr. Hatala) | Thesis | Summer 2007 |
| Kanwal, Amit | MSc | A Gaming Framework for Modeling Competitive Service Industries (Dr. Shaw) | Thesis | Summer 2007 |

**External Committee-Member**

| | | | | |
|---|---|---|---|---|
| Madkour, Yahia | MArch | Computer-Supported Form Finding, UBC, (Dr. Neumann) | Thesis | Spring 2009 |

**Honor's students (Undergraduate)**

| | | | |
|---|---|---|---|
| Lai,Zhen-Yu Stanley | Social Media as a Medium to Orginize Communities in Disaster Relief Operations | Fall 2012 | Spring 2013 |
| Lim,Wei Zhuo Justin | Application on Online Maps for Situational Awareness in Disaster Relief Operations | Fall 2012 | Spring 2013 |
| Ooi,Yee Loong | Information coordination during pre- and post-disaster event | Fall 2012 | Spring 2013 |
| Vaivas, Matt | MEMBRAILLE: A Mobile Application for Adults to Learn Encoding and Decoding in Braille. | Spring 2013 | Summer 2013 |

**Supervision of Teaching Assistants**

(*<Course number>-<Course Name>, <Academic Year>-<Term {1:Fall, 2:Spring, 3:Summer}> <Number of sections>, …)

| **Name** | **Degree** | ***Course** |
|---|---|---|
| Cheng, Nathan | UGrad | IAT 337-Representation and Fabrication, 2010-2 1 |
| Sharifi, Parjad | PhD | IAT 337-Reprensentation and Fabrication, 2010-1 2, |
| Shireen, Naghmi | PhD | IAT 337-Reprensentation and Fabrication, 2010-1 1, 2011-3 3 |
| Desjardins, Audrey | PhD | IAT 106-Spatial Thinking and Communicating, 2010-1 |
| Popovic, Jelena | MSc | IAT 106-Spatial Thinking and Communicating, 2010-1 |
| Tafazzoli M. Esmaeil | PhD | IAT 106-Spatial Thinking and Communicating, 2010-1 |
| Khalili-Araghi, Ali | PhD | IAT 452-Developing Design Tools, 2012-2 |
| Shinto, Yosuke | UGrad | IAT 337-Reprensentation and Fabrication, 2009-2 1 |
| David Bergman | MSc | IAT 337-Reprensentation and Fabrication, 2009-2 1 |
| Maleki, Maryam | PhD | IAT 106-Spatial Thinking and Communicating, 2007-1 |
| Sheikholeslami, Roham | MSc | IAT 106-Spatial Thinking and Communicating, 2007-1;<br>IAT 337-Representation and Fabrication, 2008-2 1 |
| Chueh, Timothy | MSc | IAT 106-Spatial Thinking and Communicating, 2007-1 |
| Currie, Bernadette | Engineer | IAT 106-Spatial Thinking and Communicating, 2007-1 |
| He, Yin | MA | IAT 106-Spatial Thinking and Communicating, 2007-1 |
| Motamedi, Nima | MSc | IAT 337-Reprensentation and Fabrication, 2008-2 2 |
| Asadi, Mohsen | PhD | IAT 452-Developing Design Tools, 2011-2 (sessional)<br>IAT 452-Developing Design Tools, 2014-2 |
| Sanchez, Rodolfo | MSc | IAT 337-Reprensentation and Fabrication, 2012-1 3, 2013-2 3<br>IAT 405-Design Studio II (as team mentor) 2013-1 |
| Funk, Natalie | PhD | IAT 405-Design Studio II (as team mentor) 2013-1 |
| Prastio, Irine | MA | IAT 405-Design Studio II (as team mentor) 2013-1 |
| Freiberg, Jacob | MSc | IAT 337-Representation and Fabrication 2014-2 2 |
| Elkhaldi, Maher | PhD | IAT 337-Representation and Fabrication 2014-2 1 |
| Sridharan, Srilekha | PhD | IAT 432-Design Representation 2014-3 1 |

| | | |
|---|---|---|
| Patra, Abhisekh | PhD | IAT 437-Representation and Fabrication 2015-2 1 |
| Joksimovic, Srecko | PhD | IAT 452-Developing Design Tools 2015-2 1 |

## ACADEMIC SERVICE

Member: Infrastructure Committee, SIAT, SFU (2007 – 2008, 2013-Present)
Member: Learning Outcomes Ad-hoc Committee (with J. Dill, H. Selban, S. Vivian)–(Fall 2012–Spring 2013)
Member: 3D Software Working Party (with R. Woodbury, R. Taylor, K. Zupan) – (Spring 2011)
Faculty Advisor: SolidLab Prototyping Space, SIAT, SFU, 2009 – Present)
Chair: Graduate Admission Committee, SIAT, SFU (2007 - 2009)
School Liaison: SFU Surrey Library, SIAT Representative (2007 - Present)
Member: Graduate Program Committee, SIAT, SFU (2007 - Present)
Member: Graduate Admission Committee, SIAT, SFU (2006 – 2012, 2014-Present)
Member: Tenure Promotion Committee, SIAT, SFU (2007 - 2008)
Faculty Representative: SFU Senate Library Committee, FAS, SFU (2007 - 2008)
Faculty Representative: UAE University Faculty Affairs Committee (2005 - 2006)
Member: Software Engineering Program and ABET Committee (2005 - 2006)
Chair: Teaching Effectiveness Committee, (2004 - 2006)
Member: Computer Programming Curriculum Committee (2004 - 2005)
Member: CIT Strategic Planning Committee (2004 - 2006)
Member: CIT Building Utilization and Transition Committee (2005 - 2006)
Chair: College Examination Board, UAE University (2004)
Member: Library-Text Book Committee, UAE University (2004)
Member: Teaching Effectiveness Committee, UAE University (2004)
Faculty Representative: Faculty and Staff Orientation and Support Services Work Group (2004)
Member: University Education Council, Carnegie Mellon University (2002-2003)
Member: Exploratory Space Task Force, Carnegie Mellon University, (2001-2002)
Member: Office of Technology for Education, Carnegie Mellon University (2001)

## ACADEMIC COMMUNITY INVOLVEMENT

Committee Member: CAADRIA 2014 (Paper Selection Committee)
Reviewer: Journal of Computer Aided Design, Elsevier, 2012, 2013
Reviewer: Frontiers of Architectural Research Journal, Elsevier, 2013
Reviewer: SIGCHI 2013
Reviewer: VAST Challenge 2012, 2013
Reviewer: VisWeek, SciVis-InfoVis-Vast, 2012
Reviewer: Hawaii International Conference on System Sciences, 2011
Reviewer: ACADIA 2011, 2014
Referee and Advisor: SIAT Spring Showcase and Competition, 2011
Reviewer: SmartGeometry 2011, Denmark; 2012, New York; 2013, London UK
Reviewer: CAADRIA 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015.
Reviewer: CAAD Futures 2009, Montreal Canada; 2011, Liege Belgium.
Reviewer: Book Chapters for Gu N. and X. Wang (eds.), Computational Design Methods and Technologies: Applications in CAD, CAM and CAE Education (2010).
Reviewer and Publication Co-chair: Innovation in IT Conference Al-Ain, UAE (2008)
Reviewer: International Journal of Computational Science (2007 Special Issue)
Reviewer: Innovation in IT 07 Conference Dubai, UAE (2007)
Reviewer: International Journal of Computers and Applications (2004 - 2005)

Participant: Interdisciplinary Charete Day on University Restructuring, SFU Burnaby Campus, (2007)
Judge: First Lego League Challenge, BC Provincial Competition (January 2008)
Judge: First Lego League Challenge, Fraser Valley Competition (November 2007)
Judge: UAE National Programming Contest (2006)
Judge: UAE National Programming Contest (2005)
Publication editor, organization committee member: Innovation in IT 05 Conference, UAE (2005)
Organization committee member and reviewer: Innovation in IT 04 Conference Dubai UAE (2004)
Graduate student representative: Graduate Student Assembly at Carnegie Mellon University (2001-2003) (www.andrew.cmu.edu/~gsa)
Graduate student representative: Master and Ph.D. Committee at School of Architecture, Carnegie Mellon University (1997-1998)

## WORKSHOP PARTICIPATION AND INTEREST GROUP MEETINGS

ITAC Digital Commerce Roundtable: "Finding Your Place in an Apps World", Vancouver March 2, 2011
Presenting Data and Information, by Prof. Edward Tufte, April 29, 2009
Visual Analytics - Science and Application, Vancouver, February 2-5, 2008
Writing for Publication [ENGS-803, instructor Steve Whitmore], Spring 2008
SIAT, SFU University Restructuring Meetings, Spring and Fall 2007
Interaction Design Reading Group [lead by Prof. Alissa Antle], Spring 2007
Workshop on Graduate Supervisory for Faculty [lead by Dean of Graduate Studies, SFU], February 9, 2007
Research Ethics/UILO [by Justine Bizzocchi], SFU Surrey, December 13, 2006
SmartGeometry Workshop [funded by organization], January 2006, Cambridge UK
IBM Websphere Application Development Workshop, Spring 2005
Design Requirements Modeling Workshop, G-CAD Symposium 2004.
Design Requirements Management with DOORS (Telelogic), Spring 2004
IBM DB2 Certification Workshop, Spring 2004
Active and Collaborative Learning, (by Dr. Karl Smith), UAE University, Spring 2004

## SELECTED ARCHITECTURAL DESIGN PROJECTS AND PROFESSIONAL EXPERIENCE

**Designer**
*George Anderson Architect's Office, Pittsburgh, PA. 1998-2000*
Kubitz House Renovation and Remodeling, Pittsburgh, PA. September 2000
Tribal Fire Station, Santa Ysabel, CA. August 2000
Salim Market Apartment Addition and Renovation, Pittsburgh, PA. July 2000
Lynch House Renovation and Remodeling, Pittsburgh, PA. May 1999
Mariani & Richardson Office Renovation, Pittsburgh, PA. March 1999
YMCA Addition and Renovation, Allison Park, PA. August 1998
University of Pittsburgh, Lab Remodeling Projects, Pittsburgh, PA. 1998-2000

**Project Architect**
*Design Office of Vakif Construction and Restoration Company, Istanbul, Turkey. 1993 -1994*
Accounting Ministry Kadikoy Revenues Offices Complex, Istanbul, Turkey. 1993:
This project was selected as **one of the 12 finalists** among 216 projects for the Fourth National Architecture Exhibition Awards in 1993 (with Architect Besim Ömer Dartan)
President Suleyman Demirel Culture Center, Isparta, Turkey. 1992 - 1993 (with Consultant Prof. Dr. Dogan Kuban and Vakif Insaat Restoration Office)
Accounting Ministry Ankara Revenues Office Restoration, Ankara, Turkey. 1993 (collaboration with faculty from Middle East Technical University, School of Architecture)
Accounting Ministry Sutluce Facilities Renovation Project, Istanbul, Turkey. 1992

**Architect**

*Design Office of Vakif Construction and Restoration Company, Istanbul, Turkey. 1991- 1993*

VakifBank Adana Branch, Adana Turkey 1992-1993 (with Architect Besim Ömer Dartan)

VakifBank Kadikoy and Zeytinburnu Branches, Istanbul Turkey, 1992 - 1993

Accounting Ministry Umraniye Revenues Complex, Istanbul Turkey, 1991 (with Architect B. Ömer Dartan)

Foundations Offices Higher-Education Student Dormitories - Typical Project 1991 - 1993 (constructed in Kayseri, Mamak, Isparta, Denizli in Turkey)

Guest House on Garip Island for Mr. Yuksel Dartan, Dikili Turkey. 1991

**Project Coordinator**

Selcuk Culture Center, Ahlat Turkey. (Architect Cengiz Gencata, Istanbul, Turkey). 1993

**Design Consultant**

Becikoglu Resort Hotel, Antalya, Turkey. 1992.

**Architectural Intern**

*Design Office of Vakif Construction and Restoration Company, Istanbul, Turkey. 1989 - 1990.*

VakifBank Social Housing Project, Istanbul, Turkey. 1990 (Architect Besim Ömer Dartan)

Gunes Insurance Co. Education and Training Complex, Tekirdag, Turkey. 1990

## SCHOLARSHIPS

Pennsylvania Infrastructure Technology Alliance and Bentley Systems Incorporated. Full academic sponsorships ($10,000 + $10,000) (Fall 2000-2002)

US Army Corps of Engineers Construction Engineering Research Laboratory, Full academic scholarships through the SEED project (tuition + stipend) (1999-2000)

Turkish Council of Higher Education, Full scholarships for PhD at CMU, PA (tuition + stipend) (1996-1999)

Turkish Council of Higher Education, Full scholarships for Masters at Clemson University, SC (tuition + stipend) (1994-1996)

## AFFILIATIONS

Automation, Communication and Machinery (ACM) [SIGCHI and SIGSOFT] (2007 - Present)

Association for Computer-Aided Design in Architecture (ACADIA) (2002-Present)

Association for Computer-Aided Architectural Design Research in Asia (CAADRIA) (2004-Present)

IBM Academic Initiative (2005 - Present)

Engineers and Architects Chambers of Turkey (1991-2000)