



# **AI/GI/VI 2003**

**ARTIFICIAL INTELLIGENCE  
GRAPHICS INTERFACE  
VISION INTERFACE**

**FINAL PROGRAM**

**Dalhousie University**

**Halifax, NS**

**June 11-13, 2003**

<http://www.csd.uwo.ca/AI03/>  
<http://www.graphicsinterface.org/>  
<http://visioninterface.org/vi2003>

## Sponsor Acknowledgements

The conference organizers would like to acknowledge and thank all session organizers for their help in putting together the Technical Program. A special thank you goes out to all the student volunteers for their dedication to the conference.

We would also like to acknowledge the companies and academic institutions which have provided financial support for the AI/GI/VI conferences:

Canadian Society for Computational Studies of  
Intelligence (CSCSI)  
National Research Council of Canada (NRC)  
Canadian Human-Computer Communications Society  
Canadian Image Processing and Pattern Recognition  
Society

Global Information Networking Institute University  
Services (GINIus)  
Faculty of Computer Science, Dalhousie University  
Innovation in Design Lab, Dalhousie University

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## General Information

### ***Registration***

Registration will take place on Tuesday, June 10 between 18:00 – 21:00 in the foyer of the Computer Science Building (6050 University Ave.). On-site registration will be located in the Tupper Link between 8:00 and 17:00 on all conference days.

### ***Annual General Meetings***

The Annual General Meetings will be held on Thursday, June 12, 2003 from 17:15 – 18:15 in the following rooms:

Artificial Intelligence	Tupper Theatre A
Graphics Interface	Tupper Theatre B
Vision Interface	Tupper Theatre C

At the conclusion of the AGM, the Local Conference Chairs will meet the members at their rooms to lead them down to the Conference Banquet.

### ***Important Notices***

**Final Program:** This Final Program book provides a general preview of the Conference at the time of its printing. It should be remembered that last minute changes are unavoidable. At the on-site Registration Desk, the participants of the Conference will be provided with up-to-the-minute information.

**Message Centre:** The Message Centre will be located at the on-site Registration Desk.

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## Special Events

### ***Welcome Reception***

The Welcome Reception will be held in the Atrium of the Computer Science Building (6050 University Ave.) on Tuesday, June 10 from 19:00 until 21:00.

### ***Computer Science Reception***

The Faculty of Computer Science welcomes all conference participants to attend a reception on Wednesday, June 11 at 19:00 in the Atrium of the Computer Science Building (6050 University Ave.).

### ***Conference Banquet***

The Conference Banquet will take place on Thursday, June 12, 2003 at 19:00, immediately following the AGMs. The Banquet will be held at Pier 22 (1031 Marginal Rd.); local conference chairs will be on hand to lead participants down to Pier 22 after the AGMs. Reception at 18:30, dinner will be served at 19:00. The floor of Pier 22 is somewhat uneven; please wear comfortable shoes.

# Artificial Intelligence - AI2003

## Organizing Committee

**Conference Chair:** Charles Ling, University of Western Ontario

**Program Co-Chairs:** Yang Xiang, University of Guelph; Brahim Chaib-draa, Laval University

**Local Chair:** Malcolm Heywood, Dalhousie University

### Program Committee:

Aijun An, York U.

Evangelos Milios, Dalhousie U.

Cory Butz, U. Regina

Guy Mineau, U. Laval

Nick Cercone, Dalhousie U.

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Stefan Kremer, U. Guelph

Michael Wong, U. Regina

James Little, UBC

Jia You, U. Alberta

Stan Matwin, U. of Ottawa

Eric Yu, U. Toronto

Gord McCalla, U. Saskatchewan

Kaizhong Zhang, U. Western Ontario

Bob Mercer, U. Western Ontario

## Welcome Message

Welcome to AI'2003: The Sixteenth Canadian Conference on Artificial Intelligence!

The Program Committee has worked very hard to bring you a high quality program with research papers selected from a record-high number of submissions (in recent years). You will also enjoy presentations on state-of-art research from three keynote speakers: Victor Lesser (AI agents and systems), Tom Mitchell (machine learning), and Pierre Baldi (bioinformatics).

You will also have a great opportunity to socialize and interact with many AI researchers and graduate students. We thank gratefully to CSCSI and NRC for providing funds to assist 12 graduate students (from New Brunswick to British Columbia) to attend this conference.

Local organizers have spent countless hours to make sure that your stay in Halifax will be enjoyable.

I hope AI'2003 will be a fruitful and enjoyable experience to you all!

*Charles X. Ling*

## Keynote Speakers

**Victor Lesser**, University of Massachusetts  
*Experiences Building a Distributed Sensor Network*  
 Monday, June 11, 10:45 (Chair: Yang Xiang)

**Pierre Baldi**, University of California – Irvine  
*Machine Learning Methods for Computational Proteomics and Beyond*  
 Monday, June 11, 15:20 (Chair: Jonathan Schaeffer)

**Tom Mitchell**, Carnegie Mellon University  
*Artificial Intelligence and Human Brain Imaging*  
 Tuesday, June 12, 8:30 (Chair: Charles Ling)

## Detailed Program

All Artificial Intelligence events will take place in Tupper Theatre A, unless otherwise noted in the schedule. Morning and afternoon breaks take place in the Tupper Link.

Wednesday		Thursday		Friday	
<b>8:30 – 8:40</b>	Opening	<b>8:30 – 9:30</b>	<b>Keynote Speaker:</b> Tom M. Mitchell	<b>8:30 – 10:10</b>	<b>A6</b> Knowledge Representation
<b>8:40 – 10:20</b>	<b>A1</b> AI and Web Applications	<b>9:30 – 9:50</b>	Morning Break	<b>10:10 – 10:30</b>	Morning Break
<b>10:20 – 10:45</b>	Morning Break	<b>9:50 – 11:30</b>	<b>A4</b> Machine Learning and Data Mining	<b>10:30 – 12:10</b>	<b>A7</b> Reasoning under Uncertainty
<b>10:45 – 11:45</b>	<b>Keynote Speaker:</b> Victor Lesser	<b>11:30 – 13:00</b>	Lunch	<b>12:10 – 13:40</b>	Lunch
<b>11:45 – 13:15</b>	Lunch	<b>13:00 – 13:50</b>	<b>A5</b> AI and E-Commerce	<b>13:40 – 15:20</b>	<b>A8</b> Constraint Satisfaction
<b>13:15 – 14:30</b>	<b>A2</b> Agent and Multiagent Systems	<b>13:50 – 14:50</b>	<b>AP1</b> Poster Presentation I (Tupper Link)	<b>15:20 – 15:45</b>	Afternoon Break
<b>14:30 – 14:55</b>	<b>AG1</b> Graduate Student Symposium	<b>14:50 – 15:10</b>	Afternoon Break	<b>15:45 – 17:00</b>	<b>A9</b> Search
<b>14:55 – 15:20</b>	Afternoon Break	<b>15:10 – 16:10</b>	<b>AP2</b> Poster Presentation II (Tupper Link)		
<b>15:20 – 16:20</b>	<b>Keynote Speaker:</b> Pierre Baldi	<b>16:10 – 17:10</b>	Poster Session (Tupper Link)		
<b>16:20 – 17:10</b>	<b>A3</b> AI and Bioinformatics	<b>17:15 – 18:15</b>	Annual General Meeting		
<b>19:00 – 21:00</b>	Computer Science Reception	<b>18:30 – 21:00</b>	Conference Banquet (Pier 22)		

### ***Workshop on Business Agents and the Semantic Web***

The main goal of the workshop is to bring together researchers working on E-business, Agents, Web Systems and the Semantic Web to explore novel uses of AI techniques in the Web and extending Web techniques by AI.

The workshop will be held on Saturday, June 14, 2003 from 8:45 to 17:00, in CS Room 127 (Computer Science Building, 6050 University Ave.)

## Papers

### **Wednesday, June 11**

#### **A1 AI and Web Applications**

*(Chair: Stan Matwin)*

Session Boundary Detection for Association Rule Learning Using n-Gram Language Models  
*Xiangji Huang, Fuchun Peng, Aijun An, Dale Schuurmans, and Nick Cercone*

Negotiating Exchanges of Private Information for Web Service Eligibility  
*Keping Jia and Bruce Spencer*

Post-Supervised Template Induction for Dynamic Web Sources  
*Zhongmin Shi, Evangelos Milios, and Nur Zincir-Heywood*

Summarizing Web Sites Automatically  
*Yongzheng Zhang, Nur Zincir-Heywood, and Evangelos Milios*

#### **A2 Agent and Multiagent Systems**

*(Chair: Ali Ghorbani)*

DIAGAL: A Tool for Analyzing and Modelling Commitment-Based Dialogues Between Agents  
*Marc-André Labrie, Brahim Chaib-draa, and N. Maudet*

Situation Event Logic for Early Validation of Multi-Agent Systems  
*Sehl Mellouli, Guy W. Mineau, and Bernard Moulin*

Understanding 'Not-Understood': Towards an Ontology of Error Conditions for Agent Communication  
*Anita Petrinjak and Renée Elio*

#### **AG1 Graduate Student Symposium**

*(Chair: Evangelos Milios)*

Agent-based Online Trading System  
*S. Abu-Draz and E. Shakshuki*

On the Applicability on L-Systems and Iterated Functions Systems for Grammatical Synthesis of 3D Models  
*Luis E. Da Costa and Jacques-Andre Landry*

An Unsupervised Clustering Algorithm for Intrusion Detection  
*Yu Guan, Ali A. Ghorbani, and Nabil Belacel*

Dueling CSP Representations: Local Search in the Primal Versus Dual Constraints Graph  
*Mingyan Huang, Zhiyong Liu, and Scott D. Goodwin*

A Quick Look at Methods for Mining Subsequences in Databases  
*Linhui Jiang*

Back to the Future: Changing the Direction of Time to Discover Causality  
*Kamran Karimi*

Learning Coordination in RoboRescue  
*Sebastien Paquet*

Accent Classification Using Support Vector Machine and Hidden Markov Model  
*Hong Tang and Ali A. Ghorbani*

A Neural Network Based Approach to the Artificial Aging of Facial Images  
*Jeff Taylor*

Adaptive Negotiation for Agent Based Distribution Manufacturing Scheduling  
*Chun Wang, Weiming Shen, and Hamada Ghenniwa*

Multi-agent Architecture for Tracking Moving Objects  
*Y. Wang and E. Shakshuki*

#### **A3 AI and Bioinformatics**

*(Chair: Renée Elio)*

An Improved Ant Colony Optimisation Algorithm for the D HP Protein Folding Problem  
*Alena Shmygelska and Holger H. Hoos*

Hybrid Randomised Neighbourhoods Improve Stochastic Local Search for DNA Code Design  
*Dan C. Tulpan and Holger H. Hoos*

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### **Thursday, June 12**

#### **A4 Machine Learning and Data Mining**

*(Chair: Guy Mineau)*

Discovering Temporal/Causal Rules: A Comparison of Methods  
*Kamran Karimi and Howard J. Hamilton*

Selective Transfer of Task Knowledge Using Stochastic Noise  
*Daniel L. Silver and Peter McCracken*

Efficient Mining of Indirect Associations Using HI-Mine  
*Qian Wan and Aijun An*

Case Authoring from Text and Historical Experiences  
*Marvin Zaluski, Nathalie Japkowicz, and Stan Matwin*

**A5 AI and E-Commerce**

*(Chair: Brahim Chaib-draa)*

A Strategy for Improved Satisfaction of Selling Software Agents in E-Commerce

*Thomas Tran and Robin Cohen*

Pre Negotiations Over Services - A Framework for Evaluation

*Petco E. Tsvetinov*

**AP1 Poster Presentation 1: Machine Learning and Data Mining**

*(Chair: Bruce Spencer)*

Improving User-Perceived QoS in Mobile Ad hoc Networks Using Decision Rules Induction

*Juan A. Botia, Pedro Ruiz, Jose Salort, and Antonio Gomez-Skarmeta*

Risk Neutral Calibration of Classifiers

*Ron Coleman*

Search Bound Strategies for Rule Mining by Iterative Deepening

*William Elazmeh*

Methods for Mining Frequent Sequential Patterns

*Linhui Jiang and Howard J. Hamilton*

Learning by Discovering Conflicts

*George V. Lashkia and Laurence Anthony*

Enhancing Caching in Distributed Databases Using Intelligent Polytree Representations

*Ouerd Messaouda, John B. Oommen, and Stan Matwin*

Feature Selection Strategies for Text Categorization

*Pascal Soucy and Guy W. Mineau*

Learning Graphplan Memos through Static Domain Analysis

*M. Afzal Upal*

Classification Automaton and its Construction using Learning

*Xiangrui Wang and Narendra S. Chaudhari*

A Genetic K-means Clustering Algorithm Applied to Gene Expression Data

*Fangxiang Wu, Wenjun Zhang, and Anthony J. Kusalik*

Explanation Oriented Association Mining Using A Combination of Unsupervised and Supervised Learning Algorithms

*Yiyu Yao, Yan Zhao, and Brien Maguire*

Motion Recognition from Video Sequences

*Xiang Yu and Simon X. Yang*

**AP2 Poster Presentation 2**

*(Chair: Weiming Shen)*

A Formal Theory for Describing Action Concepts in Terminological Knowledge Bases

*Christel Kemke*

Noun Sense Disambiguation with WordNet for Software Design Retrieval

*Paulo Gomes, Francisco C. Pereira, Nuno Seco, Paulo Carreiro, Jose Luis, and Carlos Bento*

Not As Easy As It Seems: Automating the Construction of Lexical Chains Using Roget's Thesaurus

*Mario Jarmasz and Stan Szpakowicz*

The Importance of Fine-Grained Cue Phrases in Scientific Citations

*Robert E. Mercer and Chrysanne Di Marco*

Fuzzy C-Means Clustering of Web Users for Educational Sites

*Pawan Lingras, Rui Yan, and Chad West*

Re-using Web Information for Building Flexible Domain Knowledge

*Mohammed Abdel Razek, Claude Frasson, and Marc Kaltenbach*

A New Inference Axiom for Probabilistic Conditional Independence

*Cory J. Butz, Michael S.K. Wong, and Dan Wu*

Probabilistic Reasoning for Meal Planning in Intelligent Fridges

*Michael Janzen and Yang Xiang*

Probabilistic Reasoning in Bayesian Networks: A Relational Database Approach

*Michael S.K. Wong, Dan Wu, and Cory J. Butz*

A Fundamental Issue of Naive Bayes

*Harry Zhang and Charles Ling*

The Virtual Driving Instructor - Creating Awareness in a Multiagent System

*I. Weevers, J. Kuipers, A.O. Brugman, J. Zwiers, E.M.A.G. van Dijk, and A. Nijholt*

Multi-Attribute Exchange Market: Theory and Experiments

*Eugene Fink, Josh Johnson, and John Hershberger*

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**Friday, June 13**

**A6 Knowledge Representation**

*(Chair: Robert Mercer)*

On the Structure Model Interpretation of Wright's NESS Test

*Richard A. Baldwin and Eric Neufeld*

Answer Formulation for Question-Answering

*Leila Kosseim, Luc Plamondon, and Louis-Julien Guillemette*

Pattern-Based AI Scripting Using ScriptEase

*Matthew McNaughton, James Redford, Jonathan Schaeffer, and Duane Szafron*

Enumerating the Preconditions of Agent Message Types

*Francis Jeffrey Pelletier and Renée Elio*

**A7 Reasoning under Uncertainty**

*(Chair: Eric Neufeld)*

Cycle-Cutset Sampling for Bayesian Networks

*Bozhena Bidyuk and Rina Dechter*

Learning First-Order Bayesian Networks

*Ratthachat Chatpatanasiri and Boonserm Kijssirikul*

Comparing Decision Trees and Naive Bayes using AUC

*Charles X. Ling, Jin Huang, and Harry Zhang*

Model-Based Least-Squares Policy Evaluation

*Fletcher Lu and Dale Schuurmans*

**A8 Constraint Satisfaction**

*(Chair: Richard Frost)*

A Graph Based Backtracking Algorithm for Solving General CSPs

*Wanlin Pang and Scott D. Goodwin*

Iterated Robust Tabu Search for MAX-SAT

*Kevin Smyth, Holger H. Hoos, and Thomas Stuetzle*

Scaling and Probabilistic Smoothing: Dynamic Local Search for Unweighted MAX-SAT

*Dave A.D. Tompkins, and Holger H. Hoos*

A Comparison of Consistency Propagation Algorithms in Constraint Optimization

*Jingfang Zheng and Michael C. Horsch*

**A9 Search**

*(Chair: Malcolm Heywood)*

Monadic Memoization - Towards Correctness-Preserving Reduction of Search

*Richard Frost*

Searching Solutions in the Crypto-Arithmetic Problems: An Adaptive Parallel Genetic Algorithm Approach

*Man Hon Lo and Kwok Yip Szeto*

Stochastic Local Search for Multiprocessor Scheduling for Minimum Total Tardiness

*Michael Pavlin, Holger H. Hoos, and Thomas Stuetzle*

# Graphics Interface - GI2003

## Organizing Committee

**Conference and Program Chairs:** Torsten Möller, Simon Fraser University; Colin Ware, University of New Hampshire

**Local Chair:** Kori Inkpen, Dalhousie University

**Posters and Demos Chair:** Daryl Hepting, University of Regina

**Intersociety Liason and Advisor:** Kellogg Booth, University of British Columbia

**Online Services:** James Stewart, Queen's University

**Proceedings Editor:** Michael McCool, University of Waterloo

### Program Committee:

Lyn Bartram, Colligo Networks

Sheelagh Carpendale, University of Calgary

Tom Ertly, University of Stuttgart

Michael Garland, University of Illinois at Urbana-Champaign

Wolfgang Heidrich, University of British Columbia

Raghu Machiraju, Ohio State University

Blair Macintyre, Georgia Institute of Technology

Joe Marks, Mitsubishi Electric Research Labs

Joanna McGrenere, University of British Columbia

Tamara Munzner, University of British Columbia

Hanspeter Pfister, Mitsubishi Electric Research Labs

Holly Rushmeier, IBM T.J. Watson Research Center

Chris Shaw, Georgia Institute of Technology

Karan Sing, University of Toronto

Wolfgang Stürzlinger, York University

Michiel van de Panne, University of British Columbia

Oleg Veryovka, Electronic Arts Canada

## Welcome Message

Welcome to Graphics Interface (GI) 2003, a conference that combines coverage of original research results in both Human-Computer Interaction and Graphics. This is the 29<sup>th</sup> instance of the longest running conference series in human-computer interaction and computer graphics.

We set out this year to enhance the human-computer interaction side of GI with the goal of putting the conference on the map as an important place to publish HCI papers. Whether by chance, or through our efforts, we are happy to say that we have been able to increase the number of interaction-related submissions to forty-three (plus a number that combine graphics and interaction). Out of these we accepted fourteen, almost doubling the number of HCI papers that were accepted over 2002. We believe that at the same time we have maintained a high standard.

While submissions to the human-computer interaction side of GI increased, the graphics side did not suffer. Out of fifty-three very strong submissions we were able to select eighteen papers, just as many as in 2002. We also have a posters' session as forum for preliminary results on a number of projects.

In addition to an excellent technical program we are fortunate to have four outstanding keynote speakers. Randy Pausch, Co-director of the Educational Technology Center at CMU will talk about building virtual worlds; Christopher Johnson, Director of the Scientific Computing and Imaging Institute at the University of Utah, will talk about multi-field visualization. Jessica Hodgins, Associate Professor of Computer Science and Robotics at Carnegie Mellon University, will talk about animating human characters; and Stuart Card, from the Palo Alto Research Center, will talk about human interaction with information.

Enjoy the conference.

*Torsten Möller and Colin Ware*

## Keynote Speakers

**Randy Pausch**, Carnegie Mellon University  
*The Interdisciplinary Challenge of Building Virtual Worlds*  
 Wednesday, June 11, 8:45 (Chair: Kellogg Booth)

**Chris Johnson**, University of Utah  
*Computational Multi-Field Visualization*  
 Thursday, June 12, 11:00

**Jessica Hodgins**, Carnegie Mellon University  
*Animating Human Characters*  
 Friday, June 13, 8:30

**Stuart Card**, Palo Alto Research Center  
*Beyond HCI to Human Information Interaction*  
 Friday, June 13, 15:50 (Chair: Colin Ware)

## Awards

### *The Michael A.J. Sweeney Award*

The Canadian Human-Computer Communications Society honours the memory of Michael A.J. Sweeney through an annual award to the best student paper presented at each year's Graphics Interface conference. The winning paper is selected by the program committee from among the papers accepted for the conference for which one or more student authors are presenting the paper. The award will be presented at the Conference Banquet.

## Detailed Program

All Graphics Interface events will take place in Tupper Theatre B, unless otherwise noted in the schedule. Morning and afternoon breaks take place in the Tupper Link.

Wednesday		Thursday		Friday			
8:30 – 8:45	Opening: Torsten Möller, Colin Ware, Kellogg Booth		8:30 – 10:30	<b>G4</b> Input	<b>G5</b> Rendering (Tupper Theatre D)	8:30 – 9:30	<b>Keynote Speaker:</b> Jessica Hodgins
8:45 – 9:45	<b>Keynote Speaker:</b> Randy Pausch		10:30 – 11:00	Morning Break		9:30 – 10:00	Morning Break
9:45 – 10:00	Morning Break		11:00 – 12:00	<b>Keynote Speaker:</b> Chris Johnson		10:00 – 12:00	<b>G8</b> Multimedia
10:00 – 12:00	<b>G1</b> Modeling		12:00 – 13:30	Lunch		12:00 – 13:30	Lunch
12:00 – 13:00	Lunch	Lunch	13:30 – 15:00	<b>G6</b> Mixing Reality		13:30 – 15:30	<b>G9</b> Deformable models
13:00 – 13:30		<b>GP1</b> Poster					
13:30 – 15:00	<b>G2</b> Detail and Context	Presentation (Tupper Link)	15:00 – 15:30	Afternoon Break		15:30 – 15:50	Afternoon Break
15:00 – 15:30	Afternoon Break		15:30 – 17:00	<b>G7</b> Meshes and Surfaces		15:50 – 16:50	<b>Keynote Speaker:</b> Stuart Card
15:30 – 17:00	<b>G3</b> Hardware Methods		17:15 – 18:15	Annual General Meeting		16:50 – 17:00	Closing Remarks
19:00 – 21:00	Computer Science Reception		18:30 – 21:00	Conference Banquet (Pier 22)			

## Papers

### **Wednesday, June 11**

#### **G1 Modeling**

(Chair: *Oleg Veryovka*)

Fast Extraction of BRDFs and Material Maps from Images  
*Rafal Jaroszkiwicz and Michael D. McCool*

Interactive Point-Based Modeling of Complex Objects from Images  
*Pierre Poulin, Marc Stamminger, François Duranleau, Marie-Claude Frasson, and George Drettakis*

Silhouette-Based 3D Face Shape Recovery  
*Jinho Lee, Baback Moghaddam, Hanspeter Pfister, and Raghu Machiraju*

Simulating Fluid-Solid Interaction  
*Olivier Gènevaux, Arash Habibi, and Jean-Michel Dischler*

#### **GP1 Poster Presentation**

Table-Top Interfaces You Can Rotate: Rendering Issues  
*Billy Biggs*

Transparency for Item Highlighting  
*James Bowes, David Dearman, and Ryan Perkins*

Automated Generation of Low-Bandwidth Scene Descriptions Using Particle-Filtering in Computational Stereo Vision  
*Sam P. Bromley and John S. Zelek*

Participatory Design with Aphasic Individuals  
*Karyn Moffatt, Leah Findlater, Rhian Davies, and Joanna McGrenere*

Haptic Guides: Providing Usable Force Feedback Information in Time Critical Tasks  
*Ben Forsyth and Karen MacLean*

Painting Lighting and Viewing Effects  
*Cindy M. Grimm*

Design of a Device to Assist with Repetitive Questions in Patients with Alzheimer's Disease  
*Kirstie Hawkey*

Visualizing Meeting States for a Smooth Online Discussion  
*Masayuki Ihara, Minoru Kobayashi, and Brian Fisher*

Putting a Face to a Name: Instant Messaging in the Workplace Among Distributed Teams  
*Melanie Kellar*

3D Visualization of Websites using VRML  
*Michael Smit*

Two-Handed Colour Selection  
*Celine Latulipe, Elodie Fourquet, and William B. Cowan*

Tractor Beam: Reaching Distant Objects on Tabletop Displays  
*Karen Parker*

Map Morphing: Visualizing Relationships Between Map Views  
*Derek Reilly*

Object-based Annotations for Digital Images  
*Hathai Tanta-ngai*

#### **G2 Detail and Context**

(Chair: *Wolfgang Stuerzlinger*)

A Comparison of Traditional and Fisheye Radar View Techniques for Spatial Collaboration  
*Wendy A. Schafer and Doug A. Bowman*

Finding Things in Fisheyes: Memorability in Distorted Spaces  
*Amy Skopik and Carl Gutwin*

Comparing ExoVis, Orientation Icon, and In-Place 3D Visualization Techniques  
*Melanie Tory and Colin Swindells*

#### **G3 Hardware Methods**

(Chair: *Raghu Machiraju*)

Hardware-Accelerated Visual Hull Reconstruction and Rendering  
*Ming Li, Marcus Magnor, and Hans-Peter Seidel*

CInDeR: Collision and Interference Detection in Real-Time Using Graphics Hardware  
*Dave Knott and Dinesh K. Pai*

Texture Partitioning and Packing for Accelerating Texture-Based Volume Rendering  
*Wei Li and Arie Kaufman*

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### **Thursday, June 12**

#### **G4 Input**

(Chair: *Joanna McGrenere*)

Input-Based Language Modelling in the Design of High Performance Text Input Techniques  
*R. William Soukoreff and I. Scott MacKenzie*

Less-Tap: A Fast and Easy-to-Learn Text Input  
Technique for Phones

*Andriy Pavlovych and Wolfgang Stuerzlinger*

The Effects of Dynamic Transparency on Targeting  
Performance

*Carl Gutwin, Jeff Dyck, and Chris Fedak*

A Gestural Interface to Free-Form Deformation

*Geoffrey M. Draper and Parris K. Egbert*

## **G5 Rendering**

*(Chair: Wolfgang Heidrich)*

Dynamic Canvas for Non-Photorealistic Walkthroughs

*Matthieu Cunzi, Joëlle Thollot, Sylvain Paris, Gilles  
Debunne, Jean-Dominique Gascuel, and Frédo Durand*

Pen-and-Ink Textures for Real-Time Rendering

*Jennifer Fung and Oleg Veryovka*

Multi-Resolution Point-Sample Raytracing

*Michael Wand and Wolfgang Straßer*

Entropy-Based Adaptive Sampling

*Jaume Rigau, Miquel Feixas, and Mateu Sbert*

## **G6 Mixing Reality**

*(Chair: Daryl Hepting)*

Digital Decor: Augmented Everyday Things

*Itiro Sio, Jim Rowan, Noyuri Mima, and Elizabeth Mynatt*

A Tangible Interface for High-Level Direction of Multiple  
Animated Characters

*Ronald A. Metoyer, Lanyue Xu, and Madhusudhanan  
Srinivasan*

Mixed Initiative Interactive Edge Detection

*Eric Neufeld, Haruna Popoola, David Callele, and David  
Mould*

## **G7 Meshes and Surfaces**

*(Chair: Michiel van de Panne)*

A Stream Algorithm for the Decimation of Massive  
Meshes

*Jianhua Wu and Leif Kobbelt*

Distortion Minimization and Continuity Preservation in  
Surface Pasting

*Rick Leung and Stephen Mann*

Multiple Camera Considerations in a View-Dependent  
Continuous Level of Detail Algorithm

*Bradley P. Kram and Christopher D. Shaw*

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**Friday, June 13**

## **G8 Multimedia**

*(Chair: John Dill)*

Portrait: Generating Personal Presentations

*James Fogarty, Jodi Forlizzi, and Scott E. Hudson*

Modularity and Hierarchical Structure in the Digital Video  
Lifecycle

*Ron Baecker and Eric Smith*

A Taxonomy of Tasks and Visualizations for Casual  
Interaction of Multimedia Histories

*Charlotte Tang, Gregor McEwan, and Saul Greenberg*

Learning from Games: HCI Design Innovations in  
Entertainment Software

*Jeff Dyck, David Pinelle, Barry Brown, and Carl Gutwin*

## **G9 Deformable Models**

*(Chair: Karan Singh)*

Interactive Deformation Using Modal Analysis with  
Constraints

*Kris K. Hauser, Chen Shen, and James F. O'Brien*

Easy Realignment of k-DOP Bounding Volumes

*Christoph Fünfzig and Dieter W. Fellner*

Scanning Large-Scale Articulated Deformations

*Jochen Lang, Dinesh K. Pai, and Hans-Peter Seidel*

Toward Modeling of a Suturing Task

*Matt LeDuc, Shahram Payandeh, and John Dill*

# Vision Interface - VI2003

## Organizing Committee

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## Welcome Message

Welcome to Halifax and to the 16th International Conference on Vision Interface (VI'2003)!

Vision Interface conferences have always been known as an excellent forum for both networking and learning. This year we have an excellent collection of papers which have been triple reviewed by the program committee. The paper acceptance rate for the conference was 61%. The posters being presented at the conference are also of excellent quality. The invited speakers this year are highly recognized international scientists and they cover the latest research trends in motion analysis, high level vision as well as the neuroscience of vision. Two other conferences: Artificial Intelligence (AI'2003) and Graphic Interface (GI'2003) are held jointly - we hope you will find the VI'2003 conference a rewarding and very enjoyable experience.

As in the past, this year's special effort is devoted to acknowledging the quality of the contributions. Based on the reviewers' comments and the presentations given at the conference, two awards - for the best paper and for the best student paper - will be presented at the conference banquet. In addition, the best six to ten papers will be solicited for publishing in a special issue of the International Journal of Robotics and Automation (Acta Press).

Because of the large number of submissions and the desire to keep the conference single-tracked, we have decided to reduce the presentation time to 20 minutes and to make one demo-poster session. We hope however that this would not decrease the level of interaction between the speakers and the audience, but in fact would only provide a wider exposure of the papers to the conference attendees. We are proud to bring you the proceedings on three different media: a paper hardcopy, a CD-ROM and an on-line version put on the Vision Interface website at [www.visioninterface.org](http://www.visioninterface.org).

The organization of a conference is a task that requires the collaboration of many people. I personally would like to thank warmly all members of the VI'2003 program committee and my co-chair and registration chair John Barron. Without their help and dedication it would not be possible to produce the proceedings of high-quality papers in such a short time frame. I also would like to thank CIPPRS's president Fathallah Nouboud, whose advice has contributed a lot to the success of the conference. I would also thank David Nicol of Dartmouth College for use of his WIMPE program for managing paper submission and review and his help in getting WIMPE running when it was determined that perl was buggy in the new version of Linux. And of course, many thanks go to all authors who submitted their papers, no matter whether their papers were accepted or not. It is worth noting that more than half of the conference papers are from

outside of Canada, representing research of 15 different countries. This makes the conference truly international. Many thanks to all!

Have a great conference!

*John S. Zelek,*

## Keynote Speakers

**Terry Caelli**, University of Alberta

*A Bayesian Approach to Image Understanding: From Images to Virtual Forests*

Wednesday, June 11, 14:00 (Chair: John Zelek)

**Gustavo Deco**, Siemens Research

*The role of attention in visual perception: a computational neuroscience model*

Thursday, June 12, 14:00 (Chair: John Zelek)

**David Fleet**, Palo Alto Research Centre

*Bayesian Inference of Visual Motion Boundaries*

Friday, June 13, 8:30 (Chair: John Barron)

## Detailed Program

All Vision Interface events will take place in Tupper Theatre C, unless otherwise noted in the schedule. Morning and afternoon breaks take place in the Tupper Link.

	Wednesday	Thursday	Friday
<b>8:30 – 8:50</b>	Opening	<b>V4</b> Human Computer Interaction	<b>V6</b> Low-level Vision
<b>8:50 – 10:30</b>	<b>V1</b> Motion & Activity Analysis		
<b>10:30 – 10:50</b>	Morning Break		
<b>10:50 – 11:50</b>	<b>V2</b> Video Processing	<b>VP1</b> Poster & Demo Session	<b>Keynote Speaker:</b> David Fleet
<b>11:50 – 12:30</b>			Lunch
<b>12:30 – 13:20</b>	Lunch		
<b>13:20 – 14:00</b>	Lunch	Lunch	<b>V7</b> Early Vision
<b>14:00 – 15:00</b>	<b>Keynote Speaker:</b> Terry Caelli	<b>Keynote Speaker:</b> Gustavo Deco	
<b>15:00 – 15:20</b>	Afternoon Break		
<b>15:20 – 17:00</b>	<b>V3</b> Robotic Vision	<b>V5</b> Shape Analysis	<b>V8</b> Object Recognition
<b>17:15 – 18:15</b>		Annual General Meeting	
<b>18:30 – 19:00</b>		Conference Banquet	
<b>19:00 – 21:00</b>	Computer Science Reception	(Pier 22)	

## Papers

### **Wednesday, June 11**

#### **V1 Image Coding and Object Representation**

(Chair: John Barron)

Plant Growth Measurement Techniques Using Near-Infrared Imagery

*Amr Aboelela, John Barron, Albert Liptay*

Progressive Human Skeleton Fitting

*Jérôme Vignola, Jean-François Lalonde, Robert Bergevin*

Representation and Recognition of Activity Using Propagation Nets

*Yifan Shi, Aaron Bobick*

Monitoring Human Activities: Flexible Calibration of a Wide Area System of Synchronized Cameras

*Stéphane Drouin, Régis Poulin, Patrick Hébert, Marc Parizeau*

Tracking, Segmentation and Optical Flow

*King Yuen Wong, Minas E. Spetsakis*

#### **V2 Video Processing**

(Chair: Chahir Elmoataz)

dtecton et extraction automatique de texte en video: une approche par morphologie mathematique  
*Schupp Sohie, Chahir Elmoataz*

User-Friendly Integration of Virtual Objects into Image Sequences with Mosaics

*Hellward Broszio, Thorsten Thormählen, Patrick Mikulastik*

A Team Play Analysis Support System for Soccer Games

*George Lashkia, N. Ochimachi, E. Nishida, S. Hisamoto*

Simultaneous Tracking and Estimation of a Skeletal Model for Monitoring Human Motion

*Stéphane Drouin, Patrick Hébert, Marc Parizeau*

Robust Motion Segmentation by Clustering in Subspace .

*Hongbin Wang, Hua Li*

#### **V3 Robotic Vision**

(Chair: Mark Fiala)

Lighting correction for underwater mosaicking enhancement

*Manon Borgetto, Vincent Rigaud, Jean-François Lots*

Multiple mobile objects detection and tracking with an overhead camera

*Andrzej Kasinski, Alaa Hamdy*

A Panoramic Model for Remote Robot Environment Mapping and Predictive Display

*Dana Cobzas, Martin Jagersand, Hong Zhang*

ARToolkit Applied to Panoramic Vision for Robotic Navigation.

*Mark Fiala*

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### **Thursday, June 12**

#### **V4 Human Computer Interaction**

(Chair: Michael Greenspan)

A Gazing Point Estimation method on the Monitor by Using the Surrounding Camera.

*Takeshi Iwana, Kazuhiko Yamamoto, Kunihito Kato, Hitoshi Hongo*

A System for Synchronous Distance Learning

*Bill Kapralos, Alexander Barth, Jacky Ma, Michael Jenkin*

Visual Hand Pose Identification for Intelligent User Interfaces

*J.R. Parker, Mark Baumbach*

Robust Detection Method of the Driver's Face and Eye Region for Driving Support System

*Isamu Takai, Kazuhiko Yamamoto, Kunihito Kato, Keiichi Yamada, Michinori Andoh*

Tracking a Sphere Dipole

*Michael Greenspan, Ian Fraser*

Replacing a Mouse with Hand Gesture in a Plane-Based Augmented Reality System

*Chris McDonald, Gerhard Roth*

#### **VP1 Posters**

A Linear Shape from Motion Algorithm using Rotation Information of the Cameras

*Akira Amano, Tsuyoshi Migita, Naoki Asada*

Graph Matching For Face Recognition Using Genetic Algorithms.

*Ehsan Fazl, Kiana Hajebi*

A new input device for 3D sketching

*Cindy Grimm, Mark Schroering, Robert Pless*

A Near Real-Time Face Recognition System

*Kalaiarasi Kandasamy, Aliza Tajudin, R. K. Subramanian*

Position and Pose Adjstment of Mobile Camera with Foveated Wide-angle Lens

*Nobuyuki Kita, Haiquan Yang, Yasuyo Kita*

VIP: Visual tool for comparing Images of People  
*Michel Lantagne, Marc Parizeau, Robert Bergevin*

3D Face Recognition using Multiple Features for  
*Yeunghak Lee, Kunwoo Park, Jaechang Shim, Taihong Yi*

Flexible multi-classifier architecture for face recognition systems.  
*Alexandre Lemieux, Marc Parizeau*

Artifacts Reduction in Mutual Information-based Image Registration.  
*Jundong Liu, Junhong Liu*

Evolutionary Strategies and Entropy Approach for the Optimization of a Fuzzy Classification  
*M'barek Nasri, El Hitmy*

Fast Multiple Camera Head Pose Tracking  
*Ravikrishna Ruddaraju, Antonio Haro, Irfan Essa*

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Edge Vectorization for Embedded Real-Time Systems using the CV-SDF Model  
*Dirk Stichling, Bernd Kleinjohann*

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*Yuexiong Tao, Qigang Gao*

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*Lei Wang, Cindy Grimm, Robert Pless*

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*Haisheng Wu, John Zelek*

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*Arnould Xavier, Coster Chermant, Elmoataz Chratier*

A High-speed Estimation Method using the Shape Change Feature with a High-speed Camera  
*Takafumi Yamazoe, Kunihiro Kato, Kazuhiko Yamamoto*

Generic Edge Tokens: Representation, Segmentation and Grouping  
*Xiaofen Zheng, QiGang Gao*

**V5 Shape Analysis**  
(Chair: *David Clausi*)

Estimating Bulk Geometric Properties of Cellular Structures  
*Shannon Puddister, David A. Clausi, G. Wayne Brodland*

An Algorithm for Extracting Lines and Circles with High-Speed and Accuracy  
*John Gates, Miki Haseyama, Hideo Kitajima*

Identify and Remove Hough Transform Method  
*Mark Fiala*

An Integrated Approach to the Segmentation and Recognition of Objects using Thin Plate Spline Method.  
*Xun Wang, Feng Gao, Zhigang Peng, Lei He, William G. Wee*

A Shape-From-Shading Algorithm Using Photometric Stereo.  
*Osamu Ikeda*

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**Friday, June 13**

**V6 Low Level Vision**  
(Chair: *Nathan Cahill*)

Solving the Correspondence Problem by Finding Unique Features  
*Peter Biber, Wolfgang Strasser*

Local Non Rigid Image Registration using Mutual Information  
*Clinton Fookes, Anthony Maeder*

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*André Neubauer, Rainer Wegenkittl*

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*Baozhong Tian, John Barron, Wang Kay, Jacky Ngai, Hagen Spies*

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*David Clausi, Huawu Deng*

**V7 Early Vision**  
(Chair: *Hagen Spies*)

Edge Modeling for Analysis and Manipulation of Object Boundaries  
*Eric Mortensen, Wei Yan, William Barrett*

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*Li Cheng, Terry Caelli*

Certainties in low-level Operations  
*Hagen Spies*

Cell Formation and Organization in Low-Level Vision  
Based on Eigenpixels  
*Catherine Cheung, Peter McGuire, Gabriele D'Eleuterio*

**V8 Object Recognition**

*(Chair: Guillaume-Alexandre Bilodeau)*

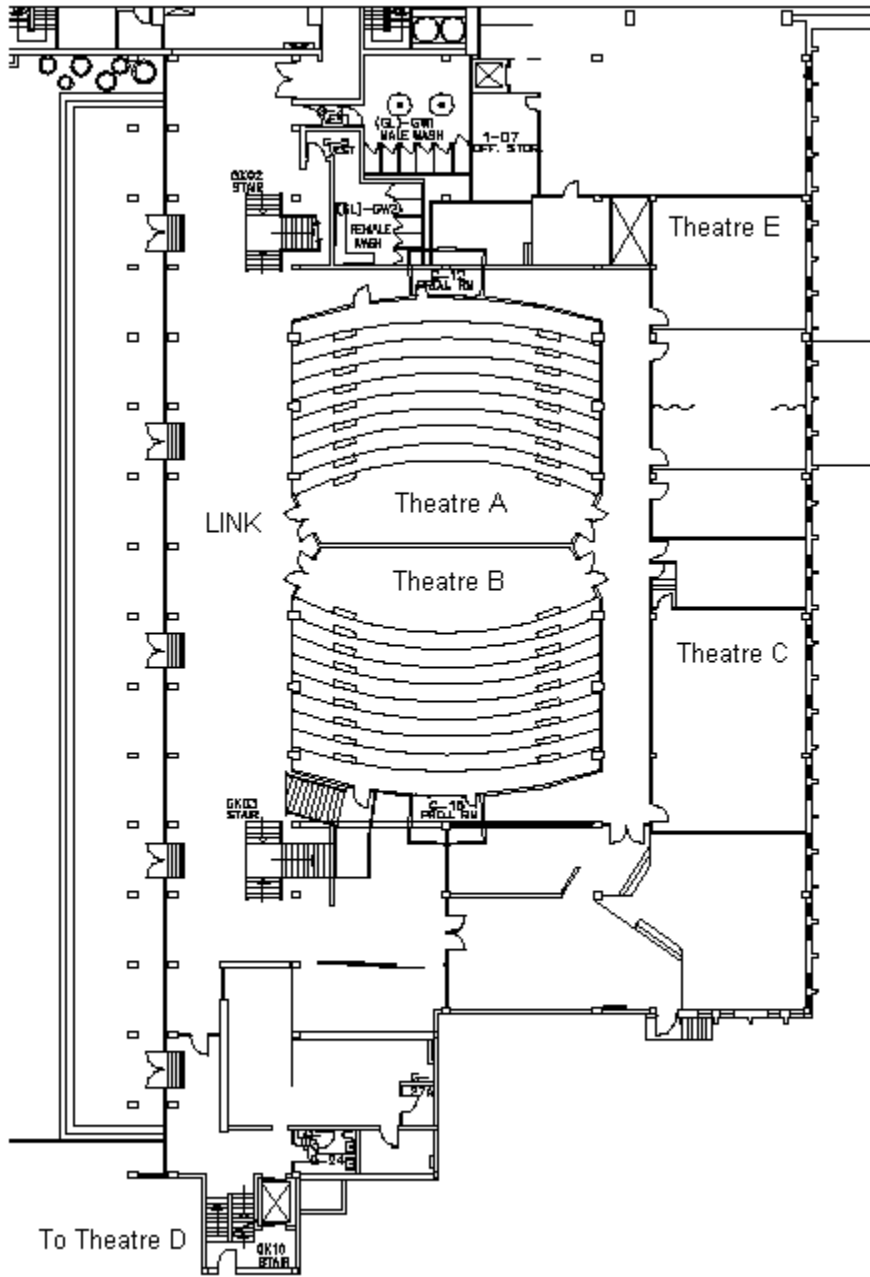
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*Guillaume-Alexandre Bilodeau, Robert Bergevin*

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*Kai Huebner*

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