

BOWEN CELINA HUI

CURRICULUM VITAE

Year of Birth: 1976

Citizenship: Canadian

RESEARCH INTERESTS

My goal is to create intelligent systems to help people in different domains. Using decision theory and Bayesian techniques, my Ph.D. work models the user's task, interaction preferences, disruption of the mental model, and personality traits. This work learns a person's preferences by combining ideas from traditional user modeling, preference elicitation, and decision making under uncertainty. Other interests include behavioural decision making and language acquisition.

EDUCATION

- **Ph.D. Candidate**, Dept. of Computer Science, University of Toronto Jan 2003 - Jan 2009 (*expected*)
Advisor: Dr. Craig Boutilier
Thesis: *Automatic Software Personalization as a Decision Making Problem.*
- **M.Sc.**, Dept. of Computer Science, University of Toronto Sep 2000 - Jan 2002
Advisor: Dr. Eric Yu
Thesis: *Developing and Evaluating a Document Visualization System for Information Management.*
- **B.Sc.**, Dept. of Computer Science, University of British Columbia Sep 1994 - Apr 1999
Advisors: Dr. Craig Boutilier and Dr. Patricia Shaw
Thesis: *Clustering Wear-able Nouns in Cantonese and Vietnamese.*
First Class Honour's in Computer Science, Minor in Linguistics, Certificate in Science Co-Op. Work Program, Group-of-Ten Canadian Student Exchange Program (held: University of Waterloo 1997-1998)

SCHOLARSHIPS & AWARDS

- NSERC PDF Postdoctoral Fellowship (NATIONAL, declined) \$80,000 CDN, Jan 2008-Dec 2009
- UCLA-IPAM Summer School Scholarship (INTERNATIONAL) \$2,500 USD, Jul 2007
- ACM Student Research Competition Grand Finals (INTERNATIONAL) Third place, Jun 2007
- Doctoral Thesis Completion Grant (INSTITUTIONAL) \$3,000 CDN, May 2007
- ACM Regional Student Research Competition (INTERNATIONAL) Second place, Oct 2006
- Grace Hopper Conference Scholarship (INTERNATIONAL) \$1,170 USD, Oct 2006
- Doctoral Thesis Completion Grant (INSTITUTIONAL) \$2,500 CDN, Jan 2006
- Mitsubishi Electric Research Labs Travel Award (INTERNATIONAL) \$250 USD, Jan 2006
- Monica Ryckman Bursary (INSTITUTIONAL) \$5,000 CDN, Sep 2005
- Ontario Graduate Scholarship (OGS) (PROVINCIAL) \$15,000 CDN, Sep 2004-Aug 2005
- Department Scholarship Top-up (INSTITUTIONAL) \$10,000 CDN, Sep 2004-Aug 2005
- PRECARN/IRIS Scholarship (NATIONAL) \$10,000 CDN, Sep 2003-Aug 2005
- NSERC PGS B Doctoral Scholarship (NATIONAL) \$40,000 CDN, Sep 2002-Aug 2004
- NCE: Canadian Language & Literacy Research Network (NATIONAL) \$10,000 CDN, Sep 2002-Aug 2004
- Department Scholarship Top-up (INSTITUTIONAL) \$20,000 CDN, Sep 2002-Aug 2004
- Ontario Graduate Scholarship (OGS) (PROVINCIAL) \$15,000 CDN, Sep 2001-Aug 2002
- Department Scholarship Top-up (INSTITUTIONAL) \$8,500 CDN, Sep 2001-Aug 2002
- University Fellowship (INSTITUTIONAL) \$2,500 CDN, Sep 2000
- Grace Hopper Conference Scholarship (INTERNATIONAL) \$700 USD, Sep 2000
- Compiler Wizards Contest (INSTITUTIONAL) First place, May 2000
- University Fellowship (INSTITUTIONAL) \$23,000 USD, Sep 1999
- Group-of-Ten Student Exchange Program Scholarship (NATIONAL) \$1,000 CDN, Sep 1997
- Loebner Prize Contest: E-GEMS Julie (INTERNATIONAL) Third place, Apr 1997
- University Dean's Honor List (INSTITUTIONAL) Dean's List, Sep 1995
- B.C. University Entrance Scholarship (PROVINCIAL) \$1,000 CDN, Sep 1994

RESEARCH EXPERIENCE

- **S4Potential Corporation and Carleton University**, Ottawa Jan 2007 - June 2008
 Supervisor: Dr. Bill Winogron, Dr. Gitte Lindgaard
 As a consultant, I advise the software team on the creation of a POMDP that adapts teaching materials according to the user's learning style. I am also involved with the Carleton group in designing experiments to collect data for populating and validating this model. [*Relevant publications: B1,D3,E1*]
- **Rotman School of Management, Marketing**, Toronto May 2005 - May 2006
 Supervisor: Dr. Dilip Soman
 As a programmer and consultant, I implemented Java programs for several marketing projects and provided feedback on the design of the experiments involved. The experiments ranged from using survey questionnaires to those involving statistical procedures, such as regression and conjoint analysis.
- **Health Care, Technology, and Place**, Toronto Feb 2005 - May 2005
 Supervisor: Dr. Caroline Fusco
 Through a grant proposal for patients at the Hospital for Sick Children, I consulted the team on the general use of computer aids with children and conducted a literature review on the application of commercial and research technology in pediatric rehabilitation, with a focus on technology involving virtual reality.
- **Developmental Psychology Laboratory**, Waterloo May 2003 - Aug 2004
 Supervisor: Dr. Eileen Wood
 In participation with the Children's Language and Literacy Network (CLLRnet, NCE), I worked with Dr. Wood on developing a taxonomy of computer literacy skills and identifying a canonical navigation structure in children games. [*A1,D8,E4*]
- **Psycholinguistics and Neurolinguistics Laboratory**, Delaware May 2000 - Aug 2000
 Supervisor: Dr. Colin Phillips
 For a summer project, I extended a Java program to parse sentences in English and German according to linguistically motivated online human processing theories.
- **Logic Programming and Artificial Intelligence Group**, Waterloo May 1998 - Aug 1998
 Supervisor: Dr. Nick Cercone
 As an extension to a course project on lexical semantics, I applied my ideas to machine translation and conducted psycholinguistics experiments with native speakers of Cantonese and Vietnamese to support the findings. [*C10,E7*]
- **Phonology Laboratory** (Multimedia Development Project), Vancouver May 1997 - Aug 1997
 Supervisor: Dr. Patricia Shaw
 For the Sliammon community in Northern B.C., I helped Dr. Shaw design two games that teach Sliammon noun class particles and phoneme distinctions using a new Amerindian font [F1]. I implemented these games in C++ and drew all the art work for them.
- **Electronic Games for Education in Math. and Sciences**, Vancouver Jan 1996 - Dec 1996
 Supervisor: Dr. Maria Klawe
 As part of the Phoenix Quest game, I enhanced the language generation and understanding technology ("The Conversation Nets" [F2]) which received third place in the Loebner Prize 1997 contest, identified areas of development and limitations of this technology, designed and programmed a logic game in C++, and worked in elementary schools for data collection and technical support.

TEACHING EXPERIENCE

- Nominated for TATP Teaching Excellence Award Feb 2005
- **Guest Lecturer**

 - Adaptive User Modeling*, Computing Insights. Jul 2005
 - Adapting to the user: technologies and applications*, CSC 104, UofT. Aug 2004
 - AI: What's so "artificial" and "intelligent" about it?*, CSC 104, UofT. Aug 2003
 - Famous AI Stories (in Hollywood)*, CSC 104, UofT. Aug 2003
 - The Lexicon in HPSG*, CS 786, Univ. Waterloo. Sep 1999
- **Teaching Assistant**

 - UofT, Cognitive Science: JUP 250 Sep 2004 - Apr 2006
 - UofT, Computer Science: CSC 104, 108, 228, 340, 384, 2515 Sep 2000 - Aug 2006
 - Univ. Waterloo, Computer Science: CS 486/686 Sep 1998 - Dec 1998
 - UBC, Computer Science: CPSC 124, 126, 128 Sep 1995 - Aug 1997

PUBLICATIONS

A. Book Chapters

1. Willoughby, T., **Hui, B.**, and Wood, E. Introduction to formal learning with technologies: Exploring the role of digital technologies. *Children's Learning in a Digital World*, Blackwell, 131-140.
2. Cohen, R., Allaby, C., Cumbaa, C., Fitzgerald, M., Ho, K., **Hui, B.**, Latulipe, C., Lu, F., Moussa, N., Pooley, D., Qian, A., and Siddiqi, S. (1999) What is initiative? Chapter One in *Computational Models of Mixed Initiative Interaction*, Kluwer Academic, 5-48.

B. Refereed Journal Articles

1. Lindgaard, G., Pyper, C., Frize, M., Walker, R., Boutilier, C., **Hui, B.**, Narasimhan, S., Folkens, J., Winogron, B., Egan, P., and Jones, C. (2008) Intelligent decision support in medicine: Back to Bayes? *Journal of Universal Computing*, Volume 14(16): 2720-2736.
2. **Hui, B.** and Yu, E. (2005) Extracting Conceptual Relationships from Specialized Documents. *The Data and Knowledge Engineering Journal (DKE)*, 54(1): 29-55.
3. Cohen, R., Allaby, C., Cumbaa, C., Fitzgerald, M., Ho, K., **Hui, B.**, Latulipe, C., Lu, F., Moussa, N., Pooley, D., Qian, A., and Siddiqi, S. (1998) What is initiative? *The User Modeling and User-Adaptive Interactions Journal (UMUAI)*, 8(3-4): 171-214.

C. Refereed Conference Papers

1. **Hui, B.**, Partridge, G., Boutilier, C. (2009) A Probabilistic Mental Model For Estimating Disruption. *International Conference on Intelligent User Interfaces (IUI)*, to appear. (Acceptance rate: 25%)
2. **Hui, B.** and Boutilier, C. (2008) Toward Experiential Elicitation for Interface Customization. *Uncertainty in Artificial Intelligence (UAI)*, 298-305. (Acceptance rate: 28.1%)
3. **Hui, B.**, Boutilier, C., Irani, P., Gustafson, S. (2008) The Need for an Interaction Cost Model in Adaptive Interfaces. *Advanced Visual Interfaces (AVI)*, 458-461. (Acceptance rate: 27.5%)
4. **Hui, B.**. (Accepted, 09/06/2007) Automatic Software Customization. *ACM Digital Library*, 5 pages. **Third Place** in the ACM Student Research Competition (ACM-SRC) 2007 Grand Finals. (Acceptance rate: 15%)
5. **Hui, B.** and Boutilier, C. (2006) Who's Asking for Help? A Bayesian Approach to Intelligent Assistance. *International Conference on Intelligent User Interfaces (IUI)*, 186-193. (Acceptance rate: 23%)
6. **Hui, B.**, Liaskos, S., and Mylopoulos, J. (2003) Requirements Analysis for Customizable Software: A Goals-Skills-Preferences Framework. *The 11th IEEE International Requirements Engineering Conference (RE)*, 117-126. (Acceptance rate: 18%)
7. **Hui, B.** (2003) Adapting Writing Support Functions for Different Language Learners. *The 8th International Pacific Association for Computational Linguistics Conference (PACLING)*, 161-170.
8. **Hui, B.** and Yu, E. (2002) Extracting Conceptual Relationships from Specialized Documents. *The 21st International Conference on Conceptual Modeling (ER)*, LNCS 2503: 232-246. (Acceptance rate: 24%)
9. **Hui, B.** Measuring User Acceptability of Machine Translation to Diagnose System Errors: An Experience Report. (2002) *Workshop on Machine Translation in Asia*, at the 19th International Conference on Computational Linguistics (COLING), 39-45.
10. **Hui, B.** (2001) Inferring Semantics from Collocation Clusters to Represent Verbs and Nouns. *The 15th International Pacific Asia Conference on Language, Information, and Computation (PACLIC-15)*, 33-44. (Acceptance rate: 40%)
11. **Hui, B.** (1996) Phonological Difficulties for Cantonese ESL Learners. *Northwest Linguistics Conference (NWLC)*, 14:87-108.

D. Other Refereed Contributions

1. **Hui, B.** (2008) Modeling Individual Decision for Collaboration and Implications for Intelligent Assistance. European Conference on Technology Enhanced Learning (ECTEL), Workshop on Individual and Group Adaptation in Collaborative Learning Environments (IGACLE), 13-27.
2. **Hui, B.** and Boutilier, C. (2008) Experiential Elicitation using Standard Gamble Queries. Southern Ontario Behavioural Decision Research Conference (SOBDR), Poster.
3. Lindgaard, G., Pyper, C., Frize, M., Walker, R., Boutilier, C., **Hui, B.**, Narasimhan, S., Folkens, J., Winogron, B., Egan, P., and Jones, C. (2007) Intelligent decision support in medicine: Back to Bayes? Annual IFIP TC13 Symposium, Trends in HCI. Oral Presentation.
4. **Hui, B.** (2007) A POMDP for Automatic Interface Customization. Workshop for Women in Machine Learning (WiML), Poster.
5. **Hui, B.** and Boutilier, C. (2006) Modeling Disruption to the User's Mental Model. Workshop on User Adaptive Systems, at Neural Information Processing Systems (NIPS 2006), Oral Presentation. (Acceptance rate: 31%)
6. **Hui, B.** and Boutilier, C. (2006) Decision-Theoretic Intelligent Assistance. Grace Hopper Celebration for Women in Computing (GHC'06), Poster and Oral Presentation, **Second Place** in the ACM Student Research Competition (ACM-SRC).
7. **Hui, B.** and Boutilier, C. (2006) Decision-Theoretic User Modeling. North East Student Colloquium on Artificial Intelligence (NESCAI), 59-66. (Acceptance rate: 32%)
8. **Hui, B.**, Wood, E., and Willoughby, T. (2005) Developing a Taxonomy of Cognitive Skills Required in Young Children Software. Children's Learning in a Digital World Conference (OWL), Poster.
9. **Hui, B.** and Boutilier, C. (2005) From Behavioural Observations to User Types to Utility Functions. Southern Ontario Behavioural Decision Research Conference (SOBDR), Poster.

E. Non-refereed Contributions

1. Lindgaard, G., Pyper, C., Frize, M., Walker, R., Boutilier, C., **Hui, B.**, Narasimhan, S., Folkens, J., Winogron, B., Egan, P., and Jones, C. (2007) Intelligent decision support in medicine: Back to Bayes? European Ergonomics & Cognitive Engineering Conference (ECCE). Invited Keynote Presentation.
2. **Hui, B.** (2006) Actively and Implicitly Learning Individual Reward Models. Grace Hopper Celebration for Women in Computing (GHC'06), Ph.D. Forum (INTERNATIONAL), 257-259.
3. **Hui, B.** and Boutilier, C. (2005) Computational Assistance – Learning When to Offer Help. PRECARN 15th Annual Conference (NATIONAL), Poster.
4. **Hui, B.**, Wood, E., and Willoughby, T. (2005) Canonical Navigation Structure for Children's Software. The 4th Canadian Language and Literacy Research Network (CLLRNet) Annual Scientific Conference (NATIONAL), Poster.
5. **Hui, B.** and Boutilier, C. (2004) Probabilistic and Decision-Theoretic User Modeling. PRECARN 14th Annual Conference (NATIONAL), Poster.
6. Mylopoulos, J., **Hui, B.**, Lapouchnian, A., Leite, J., and Liaskos, S. (2003) Customizable Software. Bell University Laboratories (BUL) National Conference: Innovation Through Partnership (INSTITUTIONAL), Poster.
7. **Hui, B.** The Role of Morphology in Machine Translation. (1998) Computer Science Technical Report CS-98-22, University of Waterloo (INSTITUTIONAL), 1-32.

F. Patents and Copyrights

1. **Hui, B.**, Shepherd, C., and Shaw, P.A. (1997) First Nations New font.
2. Klawe, M., Gribble, S., Gibbons, R., **Hui, B.**, and Allen, B. (1996) The Conversation Nets, Phoenix Quest.

PROFESSIONAL ACTIVITIES

- 2003-present
 - **Journal and Conference Reviewer**
 - Computational Intelligence Journal (CI): 2006
 - Journal of Information Science (INS): 2006
 - Knowledge-based User Interface (KUI): 2008
 - Northeast Student Colloquium in AI (NESCAI): 2007, 2008
 - Pacific Association for Computational Linguistics (PACLING): 2003, 2005
 - IEEE Visualization: InfoVis 2003, 2007, Vis/InfoVis 2004, VAST 2006
- 2003-present
 - **Programme Committee Member**
 - Knowledge-based User Interface (KUI): 2008, 2009
 - Pacific Association for Computational Linguistics (PACLING): 2003, 2005
- 1998-2006
 - **Invited Speaker across Research Groups, Universities, and Conferences**
 - “Developing An Interaction Cost Model”, Univ. Manitoba, 2008.
 - “Integrating AI and HCI in Interface Customization”, Univ. Manitoba, 2008.
 - Panel on “Embodiment, Embeddedness and the Cognitive Gap”, UTism Conference, 2006.
 - “Who’s Asking for Help?” Univ. Waterloo, 2005.
 - “Some User Models: Comparisons and Criticisms”, UofT, 2003.
 - “Learning Software Design from Playing Children’s Games”, CLLRNet Conference, 2002.
 - “Defining and Formalizing the Software Customization Problem”, UofT, 2002.
 - “Using Information Extraction for Knowledge Modeling”, UofT, 2001.
 - “Issues Relevant to Verb Semantics and Sentence Processing”, UofT, 2000.
 - “Reanalysis in SPARSE”, Univ. Delaware, 2000.
 - “Overview of Pustejovsky’s Theory of Lexical Semantics”, Univ. Waterloo, 1999.
 - “A Comparison of Lexical Issues in HPSG and WordNet”, Simon Fraser Univ., 1999.
 - “Integrating Natural Language Techniques into Info. Retrieval”, Simon Fraser Univ., 1998.
- 1999-2006
 - **Conference Organization**
 - Local arrangements coordinator for PACLING 1999
 - Webmaster for PACLING 2003
 - Event volunteer at NIPS 2006, LSRL-32 2002, CONtrast 2001, ACL-COLING 1998

UNIVERSITY SERVICE

- 1998-2008
 - **Research Group Coordinator**
 - Webmaster for CoGS research group (2002-2008)
 - Local host for prospective grads in Knowledge Representation (2007), Bioinformatics (2006), and for knowledge management students from Tilburg Univ., The Netherlands (2001)
 - Organizer for natural language processing reading group (1998-1999)
- 1995-2005
 - **Student Representative on Departmental Committees**
 - UofT: Initiator and member of Graduate Scholarship Committee (2004-2005)
 - UBC: Faculty Recruiting (1996-1999), Public Relations (1996-1997)
 - Undergraduate Affairs (1995-1997), Teaching (1995-1996)

OTHER INTERESTS

- 1999, 2002-2005
 - **Team Captain**
 - Intramural Co-ed Volleyball League (Intermediate A)
- 1994-1999
 - **Elected Positions Held**
 - Computer Science Student Society/UBC: Dir. of Publishing, Secretary, and Student Rep.
 - Chinese Student Association/UBC: Student Representative
- 1996-2005
 - **Mentor**
 - In-class tutor for Grade 9 ESL and Special Education students, Toronto
 - Youth leader for teenage girls at the Cecil Community Centre, Toronto
 - Event volunteer for *Let’s Talk Science* Partnership Program, Toronto
 - Mentor for Grade 6 girls in Science, Vancouver
- 1999-2000, 2002
 - **Writer and Editor**
 - “Graduate Student Survival Guide”, for CS Graduate Student Benevolent Society
 - “PPP: Pictures of People and Places”, 1999 yearbook for CS Student Society
 - “Read Only”, monthly newsletter for CS Student Society