



FORM 100
Personal Data Form
PART I

Date

2013/06/14

Family name Bunt	Given name Andrea	Initial(s) of all given names AK	Personal identification no. (PIN) Valid 224075
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☐ I hold a faculty position at an eligible Canadian college
(complete Appendices B1 and C)

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

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

APPOINTMENT AT A POSTSECONDARY INSTITUTION

Title of position Assistant Professor	Tenured or tenure-track academic appointment	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Department Computer Science	Part-time appointment <input type="checkbox"/>	Full-time appointment <input checked="" type="checkbox"/>
Campus	<ul style="list-style-type: none">For all non-tenured or non tenure-track academic appointment and Emeritus Professors, complete Appendices B & CFor life-time Emeritus Professor and part-time positions, complete Appendix C	
Canadian postsecondary institution		

ACADEMIC BACKGROUND

Degree	Name of discipline	Institution	Country	Date yyyy/mm
Bachelor's	Computing and Information Sciences	Queen's	CANADA	1999 / 04
Master's	Computer Science	British Columbia	CANADA	2001 / 08
Doctorate	Computer Science	British Columbia	CANADA	2007 / 06

TRAINING OF HIGHLY QUALIFIED PERSONNEL

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

	Currently		Over the past six years (excluding the current year)		Total
	Supervised	Co-supervised	Supervised	Co-supervised	
Undergraduate			3	1	4
Master's	4	1			5
Doctoral					
Postdoctoral					
Others					
Total	4	1	3	1	9

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

Position held (begin with current)	Organization	Department	Period (yyyy/mm to yyyy/mm)
Assistant Professor	Manitoba	Computer Science	2009/07
Postdoctoral Fellow	University of Waterloo	School of Computer Science	2007/08 to 2009/06
Research Assistant	University of British Columbia	Computer Science	2003/09 to 2006/10
Teaching Assistant	University of British Columbia	Computer Science	2001/09 to 2003/04
Research Assistant	University of Saskatchewan	Computer Science	1998/05 to 1998/08
Research Assistant	University of Saskatchewan	Computer Science	1997/05 to 1997/08

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RESEARCH SUPPORT

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support (including NSERC grants and university start-up funds) held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			
a) Support held in the past 4 years			
Andrea Bunt	University of Manitoba Faculty of Science start-up grant 45 hours/month	24,000 24,000	2009 2010
Andrea Bunt	Supporting Task-Based Personalization University of Manitoba University of Manitoba Research Grants Program 5 hours/month	6,800	2011
b) Support currently held			
Andrea Bunt	Facilitating User Involvement in Intelligent Interactive Systems NSERC Discovery Grant 60 hours/month	20,000 25,000 25,000 25,000 25,000	2010 2011 2012 2013 2014
Andrea Bunt (Collaborating Network Investigator)	Personalized User Interfaces in Real World Contexts Graphics Animation and New Media Network Center of Excellence 60 hours/month	19,000 21,500 21,500 25,000	2010 2011 2012 2013

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RESEARCH SUPPORT

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support (including NSERC grants and university start-up funds) held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			
b) Support currently held			
Andrea Bunt	Personalized User Interfaces in Real World Contexts	3,909	2011
	Province of Manitoba	3,816	2012
	Manitoba Centres of Excellence Fund	4,438	2013
	10 hours/month		

Highly Qualified Personnel (HQP)

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

			Personal identification no. (PIN) Valid 224075	Family name Bunt
Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Adnan Khan	Master's (In Progress)	Supervised 2013 -	Using Data Mining Approaches to Recommend Command Groups	M.Sc. student at the University of Manitoba
Mohammad Noor	Master's (In Progress)	Supervised 2012 -	Intelligence-Driven User Generated Content Contribution	M.Sc. student at the University of Manitoba
Yasmeen Hashish	Master's (In Progress)	Co-supervised 2012 -	Exploring Adaptive Interfaces for Children	M.Sc. student at the University of Manitoba
Matthew Lount	Master's (In Progress)	Supervised 2010 -	Characterizing Web-Based Tutorials	M.Sc. student at the University of Manitoba
Roberta Melvin	Master's (In Progress)	Supervised 2010 -	Networked Technology in Rural and Remote Manitoba	M.Sc. student at the University of Manitoba
Patrick Dubois	Undergraduate (In Progress)	Supervised 2013 - 2013	Enhanced Commenting Facilities for Web Tutorials	3rd-year undergraduate student at the University of Manitoba
Stela Seo	Undergraduate (Completed)	Co-supervised 2012 - 2012	Exploring the Role of Affect in Web-Capable Applications	M.Sc. student at the University of Manitoba
Catherine Lauzon	Undergraduate (Completed)	Supervised 2010 - 2010	Transparency in Intelligent Interactive Systems	Client Service Representative with Shepell.fgi
Riley Draward	Undergraduate (In Progress)	Supervised 2010 - 2010	Task-Based Recommendations for Feature-Rich Software	4th-year undergraduate student at the University of Manitoba

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

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Canada

PROTECTED WHEN COMPLETED

1. Most Significant Contributions to Research (2007-2013)

Designing and Evaluating Personalization Technologies [3, 7, 14, 16, 17, 21 24, 25, 27]

Many applications today, from everyday word processors and spreadsheet applications to specialized graphic-arts packages, come with hundreds and sometimes even thousands of features, leading to highly complex and feature-rich interfaces. A primary theme of my research has been designing and evaluating *personalized interfaces* – interfaces allow users to work within tailored subsets of an application's command set. My Ph.D. work [14, 16, 17, 24, 25, 27] involved designing and evaluating a mixed-initiative approach to interface personalization, in which the system and the user collaborate to produce the tailored interface. The primary paper from this work [14] was awarded the “Best Paper” prize at IUI 2007 (22% acceptance rate). As evidence of its impact, the paper has been cited 51 times (according to Google Scholar) and has been assigned as a reading in a number of graduate-level computer science courses (e.g., University of Washington, Harvard, Texas A&M, Korea Advanced Institute of Science and Technology, University of British Columbia, and University of Waterloo). I was the lead research author on all publications stemming from my doctoral work.

Also on the topic on personalization, I collaborate on the AdaptableGIMP project with researchers from the University of Waterloo (Dr. Michael Terry and Ph.D. student Ben Lafreniere), where we are designing and evaluating a task-centric and collaborative approach to personalization. A 2011 UIST poster [21] describing our initial design for the system has already been cited 8 times (according to Google Scholar). Finally, I have collaborated with researchers at the University of Saskatchewan (Dr. Carl Gutwin) and Canterbury University (Dr. Andy Cockburn and Ph.D. student Joey Scarr) on designing and evaluating interfaces that leverage spatial memory to facilitate access to large command sets [7] as well as command subsets [3]. Our 2012 CHI paper [7] on this work received a "Best Paper" award. My primary role in this collaboration was to incorporate my knowledge of personalization research into both the framing of the problem [3, 7] and the design of the studies [7]. I also contributed to writing the papers.

Personalization Technologies in the Real-World [9, 10]

My research has also used quantitative and qualitative data collection techniques to understand real-world application use, with the goal of informing personalization technologies. A paper published at GI 2010 [10], describes joint work with colleagues at the University of Waterloo (Michael Terry, Charles Clarke) and their graduate students (Benjamin Lafreniere and John Wissell), where we examined the extent to which the large command base in a popular open-source image-manipulation program is utilized. Our data and analyses motivate the need for personalization in general and more specifically task-centric personalization. For this project I assisted with the data analysis and wrote sections of the paper.

M.Sc. student Matthew Lount, undergraduate student Catherine Lauzon, and I used a mixed-methods approach, comprised of an interview study and a two-week diary study, to explore user perceptions of deployed intelligent interactive systems (e.g., Google Suggest, Amazon, cell phone word-completion software). Our findings showed that despite the complexity of these systems, most of our participants had a working understanding of how the systems that they use as part of their daily lives operate. Furthermore, despite some holes and inconsistencies in their mental models, our participants felt that the cost of reading explanations of how the systems function would outweigh any personal benefit. Given that previously established usability guidelines for intelligent interactive systems have advocated the inclusion of explanation interfaces, our findings motivate further research into when and why explanation interfaces are necessary. The paper describing this work [9] was published at IUI 2012.

Understanding the Role of Computers in Mathematical Problem Solving [1, 11, 22, 23, 26]

Computer Algebra Systems (CAS), such as Maple and Mathematica, are licensed by hundreds of thousands of users every year. Several researchers have looked at how such mathematical tools support problem solving in educational contexts, but the degree to which they support expert work practices is largely unknown. In collaboration with Michael Terry and Edward Lank, I conducted two qualitative studies examining the work practices, artifacts and tool use of expert mathematicians in a research environment. Our findings indicated that despite their computational power, current commercial Computer Algebra Systems did not play a significant role in the way these mathematicians solved problems, particularly for those whose research was more theoretical in nature. Our studies revealed common barriers to use and provided a set of concrete recommendations future directions for improving the tools' compatibility with expert mathematicians' needs.

The primary papers describing this work were published at CHI 2009 [11] and the Journal of Human-Computer Interaction [2], two of the highest impact venues for HCI research. I was the lead researcher on both papers. The papers were written jointly by me and Dr. Terry, with feedback from Dr. Lank.

Matching Interruption Notifications with Utility [15]

This paper [15] describes the research of UBC M.Sc. student Jennifer Gluck, for whom I acted as a mentor. Jennifer's thesis focused on ways to improve users' perceptions of notification systems. Through a set of controlled empirical laboratory evaluations, we explored the impact of varying the salience of an interruption (i.e., the prominence of the notification), with the utility of its content. Specifically, we investigated a strategy where interruptions that were considered to be of higher value to the user's current task were presented using a format that has a higher degree of attentional draw, than those of lesser value. Results showed that this strategy of matching the amount of attentional draw with the importance of the notification content decreased annoyance and increased perception of benefit compared to a strategy that used the same signal regardless of the value of the interruption.

I initially proposed that Jennifer investigate this issue, and subsequently I worked closely with her and her advisor Joanna McGrenere to further refine the direction of the research and to design the controlled experiments. Jennifer was the lead author on the paper, with Dr. McGrenere and me providing detailed feedback on numerous drafts. The paper was published in CHI 2007 and has been cited 38 times (according to Google Scholar).

2. Research Contributions and Practical Applications (2007-2013)

Funding sources are denoted as follows: Discovery Grant (*), GRAND NCE (§), University of Manitoba start up grant (‡), Ontario Ministry of Research and Innovation PDF (±), Precarn Scholarship (†).

2.1 Articles in refereed journals

Articles Published

1. Bunt, A., Terry, M. and Lank, E. (2013) Challenges and opportunities for mathematics software in expert problem solving. *Journal of Human-Computer Interaction*, 28(3), pp. 222-264. ±‡
2. **Tanvir, E.**, Bunt, A., Irani, P. and Cockburn, A. (2011) Improving cascading menu selections with adaptive activation areas. Submitted to the *International Journal of Human-Computer Studies*, 69(11), pp. 769-785.‡

Articles Submitted

3. **Scarr, J.**, Gutwin, C., Cockburn, A. and Bunt, A. (2013) StencilMaps: Fast command subsets for novices that assist learning of the expert interface. *International Journal of Human-Computer Studies*, submitted May 2013 (20 pages). §

2.2 Other refereed contributions

Papers Appearing in Full in Refereed Conference Proceedings

4. **Lafreniere, B.**, Bunt, A., **Lount, M.** and Terry, M. (2013) Understanding the roles and uses of web tutorials. *Proceedings of ICSWM 2013, the AAAI International Conference on Weblogs and Social Media*, to appear, Boston, MA, 8 pages. [20% Acceptance Rate] §*
5. **Singh, A.**, **Seo, S.H.**, **Hashish, Y.**, **Nakane, M.**, Young, J.E. and Bunt, A. (2013) An interface for remote robotic manipulator control that reduces task load and fatigue. *Proceedings of RO-MAN 2013, the IEEE international Conference on Robot and Human Interactive Communication*, 2013. RO-MAN'2013, to appear, Gyeongju, Korea, 8 pages. §
6. **Melvin, R.** and Bunt, A. (2012) Designed for work, but not from here: rural and remote perspectives on networked technology, *Proceedings of DIS 2012, ACM Conference on Designing Interactive Systems*, Newcastle, UK, pp. 176-185. [20% Acceptance Rate] §*
7. **Scarr, J.**, Cockburn, A. Gutwin, C. and Bunt, A. (2012) Improving command selection with CommandMaps, *Proceedings of CHI 2012, ACM Conference on Human Factors in Computing Systems*, Austin, TX, pp. 257-266. [23% Acceptance rate] "Best Paper" Award. §
8. **Hasan, K.**, **Yang, X.**, Bunt, A. and Irani, P. (2012) A-Coord input: Coordinating auxiliary input streams for augmenting contextual pen-based interactions. *Proceedings of CHI 2012, ACM Conference on Human Factors in Computing Systems*, Austin, TX, pp. 805-814. [23% Acceptance Rate]*
9. Bunt, A., **Lount, M.** and **Lauzon, C.** (2012) Are explanations always important? A study of deployed, low-cost intelligent interactive systems. *Proceedings of IUI 2012, ACM Conference on Intelligent User Interfaces*, Lisbon, Portugal, pp. 169-178. [16% Acceptance Rate] *§
10. **Lafreniere, B.**, Bunt, A., **Whissell, J.**, Clarke, C., and Terry, M. (2010) Characterizing large-scale use of a direct manipulation application in the wild. *Proceedings of Graphics Interface (GI 2010)*, Ottawa, ON, pp. 11–17. [39% Acceptance Rate]±‡
11. Bunt, A., Terry, M. and Lank, E. (2009) Friend or foe? Examining CAS use in mathematics research. *Proceedings of CHI 2009, ACM Conference on Human Factors in Computing Systems*, Boston, MA, pp. 229–238. [25% Acceptance Rate] ±
12. **Ruiz, J.**, **Tausky, D.**, Bunt, A., Lank, E. and Mann, R. (2008) Analyzing the kinematics of bivariate pointing. *Proceedings of Graphics Interface (GI 2008)*, Windsor, ON, pp. 251–258. [40% Acceptance Rate] ±
13. **Ruiz, J.**, Bunt, A. and Lank, E. (2008) A model of non-preferred hand mode switching. *Proceedings of Graphics Interface (GI 2008)*, Windsor, ON, pp. 49–56. [40% Acceptance Rate] ±
14. Bunt, A., Conati, C. and McGrenere, J. (2007) Supporting interface customization using a mixed-initiative approach. *Proceedings of IUI 2007, ACM International Conference on Intelligent User Interfaces*, Honolulu, HA, pp. 92–101. [22% Acceptance Rate] Awarded "Best Paper". †
15. **Gluck, J.**, Bunt, A. and McGrenere, J. (2007) Matching attentional draw with utility in interruption. *Proceedings of CHI 2007, ACM Conference on Human Factors in Computing Systems*, San Jose, CA, pp. 41–50. [25% Acceptance Rate] †
16. Bunt, A., McGrenere, J. and Conati, C. (2007) Understanding the utility of rationale in a mixed-initiative system for GUI customization. *Proceedings of UM 2007, International Conference on User Modeling*, Corfu, Greece, pp. 147–156. [20% Acceptance Rate] †

Refereed Book Chapters and Magazine Articles

17. Bunt, A., Conati, C., and McGrenere, J. (2009) Mixed-initiative interface personalization as a case study in usable AI. In *Artificial Intelligence, Special Issue on Usable AI*, 30(4): 58-64. ‡

18. Bunt, A., Carenini, G. and Conati, C. (2007) Adaptive content presentation for the Web. In P. Brusilovsky, A. Kobsa and W. Nejdl (eds): *The Adaptive Web: Methods and Strategies of Web Personalization*. Springer, pp. 409–432. †

Refereed Workshop Papers, Short Papers and Extended Abstracts

19. **Seo, S.H.**, Young, J.E. and Bunt, A. (2013) Exploring the role of affect recognition in web-capable applications. *Adjunct Proceedings of Graphics Interface 2013*, Regina, SK, 2 pages (poster). ‡
20. **Melvin, R.** and Bunt, A. 2011. Effects of reduced connectivity in rural and remote communities. *ACM Conference on Human Factors in Computing Systems (CHI 2011), Workshop on Everyday Practice and Sustainable HCI: Understanding and Learning from Cultures of (Un)Sustainability (CHI 2011)*, Vancouver, BC, 5 pages. *
21. **Lafreniere, B.**, Bunt, A., **Lount, M.**, **Krynicky, F.**, and Terry, M. (2011) AdaptableGIMP: designing a socially-adaptable interface. *Adjunct Proceedings of UIST 2011, ACM Symposium on User Interface Software and Technology*, Santa Barbara, CA, 89-90, poster. §
22. Bunt, A., Terry, M. and Lank, E. (2010) The use of computational tools within mathematical work practices. *ACM Conference on Human Factors in Computing Systems (CHI 2010), Workshop on Bridging the Gap: Moving from Contextual Analysis to Design*, Atlanta, GA, 4 pages. ‡
23. Bunt, A., Lank, E. and Terry, M. (2009) Understanding the role of computers in mathematical problem solving. *8th Mathematical Knowledge Management Conference, Workshop on Mathematical User Interfaces*, Grand Bend, ON, 8 pages. ±
24. Bunt, A. and Terry, M. (2009) Opportunities for user involvement within interface personalization. *International Joint Conference on Artificial Intelligence (IJCAI 2009), Workshop on Intelligence and Interaction*, Pasadena, CA, 5 pages. ±‡
25. Spaulding, A., Gajos, K., Jameson, A., Kristensson, P.O., Bunt, A. and Haines, W. (2009) Usable intelligent interactive systems. *Special Interest Group Meeting, ACM Conference on Human Factors in Computing Systems (CHI 2009) Extended Abstracts*, Boston, MA, pp. 2743-2746. ±
26. Labahn, G., Lank, E., Marzouk, M., Bunt, A., **MacLean, S.** and **Tausky, D.** (2008) MathBrush: A case study for pen-based interactive mathematics. *SBIM 2008, Eurographics Workshop on Sketch-Based Interfaces and Modeling*, Annecy, France, 8 pages. ±
27. Bunt, A., Conati, C. and McGrenere, M. (2008) Insights from the design and evaluation of a mixed-initiative personalization facility. *ACM Conference on Human Factors in Computing Systems (CHI 2008), Workshop on Usable Artificial Intelligence*, Florence, Italy, 4 pages. ±

2.3 Non-refereed contributions

28. McGrenere, J., Bunt, A., Findlater, L. and Moffatt, K. (2010) Generalization in human-computer interaction. In M. Banich and D. Caccamise (Eds.), *Generalization of Knowledge: Multidisciplinary Perspectives*, New York: Psychology Press, pp 277-295.

Details on these Contributions

Like many other areas within computer science, the field of Human-Computer Interaction is heavily focused on conferences. As such I have chosen to publish much of my work in conference proceedings, which afford the opportunity to reach a highly focused audience of my research peers. Many of these conferences are as selective as or more selective than top journals in the field. When known, the acceptance rates are included. The ACM Conference on Human Factors in Computing Systems (CHI) is a highly selective tier 1 conference. The ACM Conference on Intelligent User Interfaces (IUI), the User Modeling Conference (now known as UMAP), the ACM Conference on Designing Interactive Systems (DIS) and the AAAI Conference on Weblogs and Social Media (ICWSM) are strong tier 2 conferences. Graphics Interface (GI), Sketch-Based Interfaces and Modeling (SBIM) and RO-MAN are tier 3. The

Journal of Human-Computer Interaction is a top HCI journal and the International Journal of Human-Computer Studies also has a strong reputation.

I was the lead research author on publications [2, 9, 11, 14, 16, 17, 22, 23, 24, 27]. Papers [6, 12, 13, 15, 18, 19, 20] are a result of research where I acted as a supervisor or mentor to the student(s) who are the primary authors. In my role as a mentor, I supervised day-to-day research activities, provided detailed feedback on paper drafts and wrote individual sections. My policy with respect to work that students conduct as part of their thesis research is to list them as the first author, however, my role in writing the papers is substantial. Publications [1, 3, 4, 8, 10, 21, 12, 15, and 23] describe collaborative work where I played a significant role in both the research and the writing. For papers [7, 26], I contributed both ideas and text.

3. Other Evidence of Impact and Contributions

Awards

“Best Paper” Award at the 2012 ACM Conference on Human Factors in Computing Systems

“Best Paper” Award at the 2007 ACM Conference on Intelligent User Interfaces

Research Fellowships

Ontario Ministry of Research and Innovation Post-Doctoral Fellowship

Program Committees

- CHI 2013, ACM Conference on Human Factors in Computing Systems
- IJCAI 2011 International Joint Conference on Artificial Intelligence
- IUI 2009, 2010, 2011, 2013 ACM Conference on Intelligent User Interfaces
- GI 2010, 2011 Graphics Interface
- ISEE 2008, 2009 Workshop on Intelligent Support in Exploratory Environments

I have also reviewed papers for over 40 conferences and journals.

4. Delays in Research Activity

Following the births of my two daughters, I was on maternity leave from July 1, 2008 to January 1, 2009 and from January 16, 2012 to October 15, 2012.

5. Contributions to the Training of Highly Qualified Personnel

Since beginning my position as an Assistant Professor in 2009, I have been involved in a range of supervisory activities. I am currently the sole supervisor for four M.Sc. students. Two of these students are in the final stages of their degrees, with expected defense dates by the end of summer 2013. I co-supervise one additional M.Sc. student with Dr. Jim Young on a topic closely related to my research interests. Since arriving at the University of Manitoba, I have supervised five undergraduate research assistants, each of whom spent a minimum of four full-time months working with my research group. I also collaborate frequently with Ph.D. student Benjamin Lafreniere at the University of Waterloo. Finally, I have served as a committee member for two M.Sc. students within our department and am on the advisory committees for three Ph.D. students in other faculties.

Students under my supervision all receive hands-on training in techniques for designing and evaluating user-centered software, skills that are highly valuable within both academia and industry. Given the importance of communication skills in industry and academia, I encourage my students to present their work often at lab meetings and during outreach events. I actively involve my students, including undergraduate students, in the preparation of scientific publications. Finally, when our papers appear at conferences, I provide students with financial assistance to attend to present their work, often to an international audience.