

Andriy Pavlovych

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Research Interests

- Human Computer Interaction
 - Human Performance in HCI
 - Investigated the effects of latency, dropouts, spatial and time jitter on pointing and target-following performance
 - Collaborative Interfaces
 - Built MULTI, an interactive tabletop and wall system, which supports co-located collaboration via laser pointers and touch
 - Participated in developing CoViD, a system for collaborative virtual 3D design
 - Developed a system to facilitate digital handoff on tabletops
 - Built hardware to improve awareness during interactive sessions on tabletops
 - Text Entry
 - Designed a novel multiple-press technique for entering text on mobile phones
 - Developed a model for predicting novice text entry performance on 12-key keypads
- Virtual Reality
 - Developed and built the hardware for Hedgehog, an optical 3D tracking device
 - Built a low-cost CAVE-like setup with 4 screens
 - Course director for an introductory undergraduate course in virtual reality
- Computer Networks
 - Course director for three undergraduate courses in computer networking
- High Dynamic Range Imaging
 - Build a prototype of a high dynamic range *projection* system
 - Demonstrated a window manager for HDR displays which improves the visibility of the UI elements in a presence of the HDR content

Education and Research Experience

- 2011–2012 **Postdoctoral Researcher**
Human-Computer Interaction Lab, Department of Computer Science, University of Saskatchewan (Saskatoon, Saskatchewan)
Advisor: Carl Gutwin
- Conducting research on the effects of latency in collaborative environments
 - Developing hardware to facilitate collaboration on interactive tabletops
 - Researching the use of spatial sound on interactive tabletops
- 2011 **Ph.D. in Computer Science**
Department of Computer Science, York University (Toronto, Ontario)
Advisor: Wolfgang Stuerzlinger
Dissertation title: *Latency, Jitter and Dropouts in Human Pointing Performance*
- 2003 **M.Sc. in Computer Science**
Department of Computer Science, York University (Toronto, Ontario)
Advisor: Wolfgang Stuerzlinger
Thesis title: *Text Entry on 12-Button Keypads: Techniques and Models.*

- 2001 **B.Sc. in Computer Science**
Specialized Honours program in Computer Science
- Graduated first class with distinction
 - Member of Dean's Honour Roll (2000)
 - Grade Point Average: 8.3 out of 9.0 possible

Teaching Experience

- 2017 **Course Director, 2nd year Data Structures and Algorithms**
McMaster University, Hamilton, ON
- Worst case analysis of algorithms, basic searching and sorting algorithms
 - Elementary data structures (stacks, queues, priority queues, search trees, heaps, hash tables, tries, graph representations)
 - Graph algorithms, basic string algorithms
- 2015, -16, -17 **Course Director, 4th year Sensory Perception, Cognition and HCI for Game Design**
McMaster University, Hamilton, ON
- Human sensory perception, learning and cognition. Use of music and sounds
 - Precise control and feedback, alternate input devices
 - Game aesthetics. Critical analysis of existing interfaces
- 2014, 2017 **Course Director, 1st year Digital Computation and Programming (CPS 125)**
Ryerson University, Toronto, ON
- C programming language, standard C libraries
 - Language statements; numeric, character, and string data types
 - Flow of control with selection and repetition, arrays, pointers, sorting, matrix operations, dynamic storage, structures and linked lists, file I/O
- 2016 **Course Director, 1st year Computer Science I (CPS 109)**
Ryerson University, Toronto, ON
- Java programming language, standard libraries
 - Language features; data types; arrays; fundamental algorithms
 - Object-oriented programming
- 2015–2016 **Professor, Information and Computer Engineering Technology program (ICET)**
Centennial College, Toronto, ON
- Java programming language, standard libraries
 - Object-Oriented Programming
- 2015 **Course Director, 4th year Mobile Communications**
York University, Toronto, ON
- Wireless local area networks, 2.5G/3G cellular wireless technologies
 - Wireless sensor networks: applications; routing
 - Satellite systems: routing, localization, handover, global positioning systems
- 2014 **Course Director, 3rd year Human-Computer Interaction**
York University, Toronto, ON
- Cognitive Science: human information processing, senses, mental models
 - User interaction paradigms, graphical user interface (GUI) development

- User interface design, user-centred design, usability principles
 - User interface evaluation techniques, usability testing
- 2014 **Course Director, 1st year Introduction to Computer Science II**
York University, Toronto, ON
- Java programming language, standard libraries
 - language statements; data types
 - Object-Oriented Programming
- 2013 **Course Director, 3rd year Human-Computer Interaction (CPS 613)**
Ryerson University, Toronto, ON
- Cognitive Science: human information processing, senses, mental models
 - User interaction paradigms
 - Graphical user interface development
 - User interface design, user-centred design, usability principles
 - User interface evaluation techniques, usability testing
- 2013 **Course Director, 4th year Introduction to Virtual Reality**
York University, Toronto, ON
- Applications of VR: training, collaborative virtual environments, medical, visualisation & decision support, design, entertainment, augmented reality, space applications, teleoperation, computer games
 - Human Factors: presence, immersion, simulator sickness (frame-rate, latency, vergence vs. accommodation, visual vs. vestibular, etc), training
 - VR input devices, filtering & tracking, VR output devices, Augmented Reality (AR) hardware, spatial audio, haptics
- 2011 **Course Director, 3rd year Communication Networks**
York University, Toronto, ON
- Encoding of analogue/digital data as analogue/digital signals
 - Data link and media access protocols; error and flow control, codes
 - Modulation types, data compression, filtering
 - Filtering, digital signal processing
- 2009 **Course Director, 3rd year Computer Network Protocols and Applications**
York University, Toronto, ON
- Course on the higher-level network protocols, security issues, network programming, and applications
 - Network Layer Protocols, including ICMP, DHCP, and ARP Multicasting
 - Transport Layer, UDP, and TCP
 - Application Layer Protocols, including HTTP and DNS
 - Multimedia, Security, VOIP
- 2009–2011 **Instructor, Game Programming Advanced Diploma program**
Humber College, Toronto, ON
- Computer Graphics, Introduction to using OpenGL, Direct3D, shaders
 - Math for game development. Matrices, linear equations, rotations, quaternions
 - Line-surface intersections, computational curves and surfaces

- 2004 **Course Director, 4th year Computer Graphics**
 York University, Toronto, ON
- Teaching practicum, as a requirement of a PhD program.
 - Introduction to Computer Graphics course
- 2000–2009 **Teaching Assistant**
 York University, Toronto, ON
- Assisted for the following courses: User Interfaces, Introduction to the Theory of Computation, Fundamentals of Data Structures, Introduction to Computer Use and others.
- Grading students' assignments, projects, and exams.
 - Holding tutorials and office hours to answer students' questions.
 - Monitoring lab sessions.

Publications in Journals and Refereed Conference Proceedings

1. Teather, R. J., Stuerzlinger, W., & Pavlovyh, A. (2014). Fishtank fitts: a desktop VR testbed for evaluating 3D pointing techniques. In *CHI'14 Extended Abstracts on Human Factors in Computing Systems*, 519-522.
2. Castellucci, S. J., Teather, R. J., & Pavlovyh, A. (2013). Novel metrics for 3D remote pointing. In *Proceedings of the 1st symposium on Spatial user interaction (SUI '13)*, 17-20.
3. Sutcliffe, S., Ivkovic, Z., Flatla, D., Pavlovyh, A., Stavness, I., Gutwin, C. (2013). Improving Digital Handoff Using the Space Above the Table, *CHI 2013: Proceedings of the 31st international conference on Human factors in computing systems*, Paris, France. 735-744.
4. Doucette, A., Mandryk, R., Gutwin, C., Nacenta, M., Pavlovyh, A. (2013). The Effects of Tactile Feedback and Movement Alteration on Interaction and Awareness with Digital Embodiments, *CHI '13: Proceedings of the 31st international conference on Human factors in computing systems*, Paris, France, 1891-1900.
5. Pavlovyh, A. and Gutwin, C. (2012). Assessing Target Acquisition and Tracking Performance for Moving Targets in the Presence of Latency and Jitter, *Graphics Interface 2012*, 109-116.
6. Pavlovyh, A. and Stuerzlinger, W. (2011). Target Following Performance in the Presence of Latency, Jitter, and Signal Dropouts, *Graphics Interface 2011*, 33-40.
7. Pavlovyh, A. and Stuerzlinger, W. (2009). The Tradeoff between Spatial Jitter and Latency in Pointing Tasks, *ACM Symposium on Engineering Interactive Computing Systems*, 187-196.
8. Teather, R., Pavlovyh, A., Stuerzlinger, W., and MacKenzie, S. (2009). Effects of tracking technology, latency, and spatial jitter on object movement, *IEEE Symposium on 3D User Interfaces*, 43-50.
9. Pavlovyh, A. and Stuerzlinger, W. (2008). Effect of screen configuration and interaction devices in shared display groupware. *Proceeding of the 3rd ACM international Workshop on Human-Centered Computing* (Vancouver, BC, Canada, October 31 - 31, 2008), 49-56.
10. Stuerzlinger, W., Zaman, L., Pavlovyh, A., and Oh, J. (2006). The design and realization of CoViD: a system for collaborative virtual 3D design. *Virtual Real.* 10, 2 (Sep. 2006), 135-147.
11. Pavlovyh, A., & Stuerzlinger, W. (2005). A High-Dynamic Range Projection System, *Photonic Applications in Biosensing and Imaging*, Eds. Warren C. W. Chan, Kui Yu, Ulrich J. Krull, Richard I. Hornsey, Brian C. Wilson, Proceedings of SPIE Vol. 5969.
12. Pavlovyh, A., & Stuerzlinger, W. (2005). An Analysis of Novice Text Entry Performance on Large Interactive Wall Surfaces, *Proceedings of HCI International 2005*, Lawrence Erlbaum, CD-ROM, July 2005.

13. Pavlovych, A., & Stuerzlinger, W. (2004). Model for non-Expert Text Entry Speed on 12-Button Phone Keypads. *Proceedings of the ACM Conference on Human Factors in Computing Systems – CHI 2004*, 351-358.
14. Pavlovych, A., & Stuerzlinger, W. (2004). Laser Pointers as Interaction Devices for Collaborative Pervasive Computing. *Advances in Pervasive Computing*, 315-320.
15. Pavlovych, A., & Stuerzlinger, W. (2003). Less-Tap: A Fast and Easy-to-learn Text Input Technique for Phones. *Graphics Interface 2003*, 97-104.

Other Publications

1. Stuerzlinger, W., Pavlovych, A., and Nywton, D. (2015). TIVS: Temporary Immersive Virtual Environment at Simon Fraser University: A Non-Permanent CAVE, *Workshop on Everyday Virtual Reality: Rethinking Virtual Reality for Home and Office Environments (WEVR 2015) at IEEE VR 2015*, 23-28, Mar. 2015.
2. Pavlovych, A., Nywton, D. and Stuerzlinger, W. (2014). TIVY: Temporary Immersive Virtual Environment at York: A Non-Permanent CAVE, *GRAND 2014 conference*, GRAND Experience demonstration, May 2014.
3. Pavlovych, A. & Stuerzlinger, W. (2011). Pursuit Tracking in Presence of Latency, Jitter, and Dropouts, Poster at *GRAND NCE conference*, May 2011.
4. Pavlovych, A. & Stuerzlinger, W. (2010) Effects of Latency Jitter and Dropouts in Pointing Tasks, Poster at *Graphics Interface 2010*, May 2010. Also appeared as Poster at GRAND NCE conference, July 2010.
5. Teather, R., Pavlovych, A. & Stuerzlinger, W. (2009). Effects of Tracking Technology, Latency, and Spatial Jitter on Object Movement, Poster at *IEEE VR 2009*, Feb. 2009.
6. Pavlovych, A. & Stuerzlinger, W. (2008). Effect of Group Size and Interaction Devices in Co-Located Computer Supported Collaborative Work, Poster at *Graphics Interface 2008*, May 2008.
7. Pavlovych, A., Vorozcovs, A., & Stuerzlinger, W. (2005). A Window Manager for High Dynamic Range Display Systems, Workshop on Emerging Display Technologies at *IEEE VR 2005*.
8. Pavlovych, A., & Stuerzlinger, W. (2003). Modeling non-Expert Text Entry Speed on 12-Button Phone Keypads. Short Paper and poster presented at *UIST 2003*.
9. Pavlovych, A. (2003). Text Entry on 12-Button Keypads: Techniques and Models. MSc Thesis.
10. Pavlovych, A. (2001). Using Sound Localization in Robot's navigation. Course Project.

Scholarships and Awards

Ontario Graduate Scholarship, 2004–2008.
 General Motors of Canada Bursary, 2004.

References available upon request