

XING-DONG YANG

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My research in Human-Computer Interaction (HCI) is at the intersection of interactive smart “things”, hardware learning and prototyping tools, and accessible computing. I create interactive systems using sensing techniques and haptics to enable powerful applications in smart physical and virtual environments and overcome societal challenges caused by poorly designed interfaces between humans and computers.

PROFESSIONAL AND RESEARCH POSITIONS

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|---|----------------|
| Simon Fraser University – School of Computing Science Associate Professor | 2022 – present |
| Dartmouth College – Department of Computer Science Adjunct Assistant Professor | 2022 – present |
| Dartmouth College – Department of Computer Science Assistant Professor | 2015-2021 |
| University of Calgary – Interactions Lab Postdoctoral Researcher. Advised by Anthony Tang and Saul Greenberg. | 2014 |
| Microsoft Research Asia – HCI Group Research Intern. Advised by Xiang Cao. | 2012 |
| Autodesk Research – User Interface Research Group Research Intern. Advised by Tovi Grossman and George Fitzmaurice. | 2010, 2012 |

HONORS AND AWARDS

Awards

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| International Chinese Association of Computer-Human Interaction Outstanding Young Leader in HCI | 2020 |
| UIST’20 Best Paper Honorable Mention Award | 2020 |
| CHI’20 Best Paper Honorable Mention Award | 2020 |
| UIST’19 Best Paper Award | 2019 |
| CHI’19 Best Paper Honorable Mention Award × 2 | 2019 |
| CHI’18 Best Paper Honorable Mention Award | 2018 |
| CHI’16 Best Paper Honorable Mention Award | 2016 |
| Bill Buxton Best Canadian HCI Dissertation Award | 2013 |
| Award of Excellence, Star of Tomorrow Internship Program , Microsoft Research Asia | 2012 |
| CHI’10 Best Paper Honorable Mention Award | 2010 |
| MobileHCI’09 Best Paper Honorable Mention Award | 2009 |
| Best Teaching Assistant Award | 2009 |

Scholarships

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|---|-------------|
| Queen Elizabeth II Graduate Student Scholarship (\$10,000 for 4 months) | 2013 |
| SurfNet Research Grant (\$21,000) | 2011 |
| iCORE Graduate Student Scholarship in ICT (\$15,000 per year). | 2010 - 2012 |
| Walter H Johns Graduate Fellowship (\$4600 per year) | 2010 - 2012 |
| Natural Sciences and Engineering Research Council of Canada (NSERC) (PGS D3: \$21,000 per year) | 2009 - 2012 |
| President's Doctoral Prize of Distinction (\$10,000) | 2009 |
| Provost Doctoral Entrance Award (\$4000) | 2009 |
| Provost Doctoral Entrance Award (\$8000) | 2008 |
| University of Manitoba Student Union Scholarship for Academic Excellence (\$3000) | 2005 |

GRANTS

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|---|-------------|
| [G.7] NSERC Discovery Grant: Making Circuit Design and Prototyping Accessible for Blind or Low Vision People (\$175,000) | 2022 – 2027 |
| [G.6] Adobe Research Gift. Supporting Virtual Semi-Extemporaneous Presentations (\$17,000). | 2011 – 2022 |
| [G.5] NSF ABR: Collaborative research: Smart earpiece for supporting healthy eating behaviors (\$976,098). With David Kotz, Jacob Sorber, Ryan Halter, Kofi M. Odame, and Kelly Caine. | 2018 – 2020 |
| [G.4] NSF CRII: SaTC: Lendable: Designing Modular Hardware and Unobtrusive Interactions to Enable Convenient and Trustworthy Lending of Small Personal Computing Devices. (\$175,000). | 2017 – 2020 |
| [G.3] CompX Faculty Grants. One-Handed Text Entry on a Smartwatch using Wrist Gestures. (\$21,000). | 2017 – 2018 |
| [G.2] NSF CSR: Large: Collaborative Research: Smart earpiece for supporting healthy eating behaviors (\$1,082,976). With David Kotz, Jacob Sorber, Ryan Halter, Kofi M. Odame, and Kelly Caine. | 2016 – 2018 |
| [G.1] Microsoft HoloLens Academic Research Grant. Augmenting Reality for the Visually Impaired with Microsoft HoloLens (\$100,000). With Emily Cooper and Wojciech Jarosz. | 2016 – 2017 |

EDUCATION

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|---|-------------|
| Ph.D. in Computing Science | 2008 - 2013 |
| *Winner of 2013 Bill Buxton Best Canadian HCI Dissertation Award | |
| Research area: Human-Computer Interaction | |
| Thesis: Blurring the Boundary between Direct & Indirect Mixed Mode Input Environments | |
| University of Alberta, Edmonton, Alberta, Canada | |
| M.Sc. in Computing Science | 2005 - 2008 |
| Research area: Haptic User Interfaces | |
| Thesis: A Performance Analysis of Motor-skill Training Using Haptic Training | |
| University of Alberta, Edmonton, Alberta, Canada | |
| B.Sc. in Computer Science (with Distinction) | 2002 - 2005 |
| University of Manitoba, Winnipeg, Manitoba, Canada | |

REFEREED PUBLICATIONS

A note on publication venues: in the field of Human-Computer Interaction, the ACM Conference on Human Factors in

Computing Systems (**CHI**) and ACM Symposium on User Interface Software & Technology (**UIST**) are considered top-tier forums for timely and impactful work, which have an annual acceptance rate of around 20 - 25%.

Underlined first authors: my advisees since I started my faculty position in July 2015.

Peer-Reviewed Conference Papers

[C.64] Z. Xu, Y. Meng, X. Bi, and **X.-D. Yang** (2022). Phrase-Gesture Typing on Smartphones. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'22)*.

[C.63] T.-Y. Wu and **X.-D. Yang** (2022). iWood: Makeable Vibration Sensor for Interactive Plywood. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'22)*.

[C.62] W. Sun, Y. Chen, Y. Chen, X. Zhang, S. Zhan, Y. Li, J. Wu, T. Han, H. Mi, J. Wang, F. Tian, **X.-D. Yang** (2022). MicroFluID: A Multi-Chip RFID Tag for Interaction Sensing Based on Microfluidic Switches. In *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT'22)*. Volume 6, Issue 3.

[C.61] H. Ye, C.-J. Lee, T.-Y. Wu, **X.-D. Yang**, B.-Y. Chen, and R.-H. Liang (2022). Body-Centric NFC: Body-Centric Interaction with NFC Devices Through Near-Field Enabled Clothing. In *Proceedings of the ACM Conference on Designing Interactive Systems (DIS'22)*. 1626-1639

[C.60] W. Sun, Y. Chen, S. Zhan, T. Han, F. Tian, H. Wang, and **X. D. Yang** (2021). RElectrode: A Reconfigurable Electrode For Multi-Purpose Sensing Based on Microfluidics. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'21)*.

[C.59] R. C. Chang, W. P. Wang, C. H. Chiang, T. Y. Wu, Z. Xu, J. Luo, B. Y. Chen, and **X. D. Yang** (2021). AccessibleCircuits: Adaptive Add-On Circuit Components for People with Blindness or Low Vision. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'21)*.

[C.58] T. Y. Wu, Z. Xu, **X. D. Yang**, S. Hodges, and T. Seyed (2021). Project Tasca: Enabling Touch and Contextual Interactions with a Pocket-based Textile Sensor. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'21)*.

[C.57] W. Cui, S. Zhu, Z. Li, Z. Xu, **X. D. Yang**, I. V. Ramakrishnan, and X. Bi (2021). BackSwipe: Back-of-device Word-Gesture Interaction on Smartphones. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'21)*.

[C.56] M. Yu, M. Zhang, C. Yu, X. Ma, **X. D. Yang**, and J. Zhang (2021). We Can Do More to Save Guqin: Design and Evaluate Interactive Systems to Make Guqin More Accessible to the General Public. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'21)*.

[C.55] T. Y. Wu, L. Tan, Y. Zhang, T. Seyed, and **X. D. Yang**. (2020). Capacitivo: Contact-Based Object Recognition on

Interactive Fabrics using Capacitive Sensing. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'20)*, 649–661.

U [C.54] N. Li, H. J. Kim, L. Shen, F. Tian, T. Han, **X. D. Yang**, and T. J. Nam. (2020). HapLinkage: Prototyping Haptic Proxies for Virtual Hand Tools Using Linkage Mechanism. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'20)*, 1261–1274. **UIST 2020 Honorable Mention Award (Top 5%)**

[C.53] A. Panotopoulou, X. Zhang, T. Qiu, **X. D. Yang**, and E. Whiting. (2020). Tactile Line Drawings for Improved Shape Understanding in Blind and Visually Impaired Users. In *ACM Transactions on Graphics (SIGGRAPH'20)*, Paper No. 89.

U [C.52] J. Davis, T.-Y. Wu, B. Shi, H. Lu, A. Panotopoulou, E. Whiting, and **X. D. Yang**. (2020). TangibleCircuits: An Interactive 3D Printed Circuit Education Tool for People with Visual Impairments. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*. **CHI 2020 Honorable Mention Award (Top 5%)**

[C.51] Z. Xu, T. Y. Wu, J. Gong, D. Zhao, W. Chen, J. Luo, S. Yin, J. Zhai, and **X. D. Yang**. (2020). BiTipText: Bimanual Eyes-Free Text Entry on a Fingertip Keyboard. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.

[C.50] T. Y. Wu, J. Gong, S. Qi, J. Chen, M. Shang, T. Seyed, and **X. D. Yang**. (2020). Fabriccio: Mid-Air Gestural Input on Interactive Fabrics. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.

[C.49] P. S. Ku, J. Gong, T. Y. Wu, S. Zhang, Z. Zhu, B. Ens, and **X. D. Yang**. (2020). Zippro: The Design and Implementation of An Interactive Zipper. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.

[C.48] P. S. Ku, Q. Shao, T. Y. Wu, J. Gong, Z. Zhu, X. Zhou, and **X. D. Yang**. (2020). ThreadSense: Locating Touch on an Extremely Thin Interactive Thread. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.

[C.47] P. C. Wong, K. Zhu, **X. D. Yang**, and H. Fu. (2020). Exploring Eyes-free Bezel-initiated Gestures on Round Smartwatches. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.

[C.46] T. Y. Wu, J. Gong, T. Seyed, and **X. D. Yang**. (2019). Proxino: Enabling Prototyping of Virtual Circuits with Physical Proxies. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'19)*, 121-132.

[C.45] J. Gong, Y. Wu, L. Yan, T. Seyed, and **X. D. Yang**. (2019). Tessutivo: Contextual Interactions on Interactive Fabrics with Inductive Sensing. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'19)*, 29-41.


U [C.44] Z. Xu*, P. C. Wong*, J. Gong, T. Y. Wu, A. Nittala, X. Bi, J. Steimle, H. Fu, K. Zhu, and **X. D. Yang** (*co-primary).


(2019). TipText: Eyes-Free Text Entry on a Fingertip Keyboard. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'19)*, 883-899. **UIST 2019 Best Paper Award (Top 1%)**

[C.43] J. Davis*, J. Gong*, Y. Sun, P. Chilana, and **X. D. Yang** (*co-primary). (2019). CircuitStyle: A System for Peripherally Reinforcing Best Practices in Hardware Computing. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'19)*, 109-120.

[C.42] S. Je, M. J. Kim, W. Lee, B. Lee, **X. D. Yang**, P. Lopes, and A. Bianchi. (2019). Aero-plane: a Handheld Force-Feedback Device that Renders Weight Motion Illusion on a Virtual 2D Plane. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'19)*, 763-775.

[C.41] S. Y. Teng, D. Y. Huang, C. Wang, J. Gong, T. Seyed, **X. D. Yang**, and B. Y. Chen. (2019). Aarnio: Passive Kinesthetic Force Output for Foreground Interactions on an Interactive Chair. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*, Paper No. 672.

 [C.40] J. Y. Lo, D. Y. Huang, T. S. Kuo, C. K. Sun, J. Gong, T. Seyed, **X. D. Yang**, and B. Y. Chen. (2019). AutoFritz: Autocomplete for Prototyping Virtual Breadboard Circuits. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*, Paper No. 403. **CHI 2019 Honorable Mention Award (Top 5%)**

 [C.39] R. Wang, C. Yu, **X. D. Yang**, W. He, and Y. Shi. (2019) EarTouch: Facilitating Smartphone Use for Visually Impaired People in Public and Mobile Scenarios. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*, Paper No. 24. **CHI 2019 Honorable Mention Award (Top 5%)**

[C.38] J. Gong, X. Yang, T. Seyed, J. Davis, and **X. D. Yang**. (2018). Indutivo: Contact-Based, Object-Driven Interactions with Inductive Sensing. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'18)*, 321-333.

[C.37] D. Y. Huang, T. Seyed, L. Li, J. Gong, Z. Yao, Y. Jiao, X. Chen, and **X. D. Yang**. (2018). Orecchio: Extending Body-Language through Actuated Static and Dynamic Auricular Postures. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'18)*, 697-710.

[C.36] Y. Li, T. Li, R. A. Patel, **X. D. Yang**, and X. Zhou. (2018). Self-Powered Gesture Recognition with Ambient Light. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'18)*, 595-608.

[C.35] G. Xia, C. Jacobsen, R. Dannenberg, Q. Chen, and **X. D. Yang**. (2018). ShIFT: A Semi-haptic Interface for Flute Tutoring. In *Proceedings of the international conference on new interfaces for musical expression (NIME'18)*, 162-167.

[C.34] J. Gong, D. Y. Huang, T. Seyed, T. Lin, T. Hou, X. Liu, M. Yang, B. Yang, Y. Zhang, and **X. D. Yang**. (2018). Jetto: Using Lateral Force Feedback for Smartwatch Interactions. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'18)*, Paper No. 426.


- U [C.33] J. Gong, Z. Xu, Q. Guo, T. Seyed, X. Chen, X. Bi, and **X. D. Yang**. (2018). WrisText: One-handed Text Entry on Smartwatch using Wrist Gestures. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'18)*, Paper No. 181. **CHI 2018 Honorable Mention Award (Top 5%)**
- [C.32] S. Je, M. Lee, Y. Kim, L. Chan, **X. D. Yang**, and B. Andrea. (2018). PokeRing: Notifications by Poking Around the Finger. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'18)*, Paper No. 542.
- [C.31] D.Y. Huang, R. Guo, J. Gong, J. Wang, J. Graham, D. N. Yang, and **X. D. Yang**. (2017). RetroShape: Leveraging Rear-Surface Shape Displays for 2.5D Interaction on Smartwatches. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'17)*, 539-551.
- [C.30] T. Han, Q. Han, M. Annett, F. Anderson, D. Y. Huang, and **X. D. Yang**. (2017). Frictio: Passive Kinesthetic Force Feedback for Smart Ring Output. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'17)*, 131-142.
- [C.29] J. Gong, Y. Zhang, X. Zhou, and **X. D. Yang**. (2017). Pyro: Thumb-Tip Gesture Recognition Using Pyroelectric Infrared Sensing. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'17)*, 553-563.
- [C.28] T. Seyed, **X. D. Yang**, and Daniel Vogel. (2017). A Modular Smartphone for Lending. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'17)*, 205-215. **UIST 2017 Best Talk Award**
- [C.27] T. Li, X. Xiong, Y. Xie, G. Hito, **X. D. Yang**, and X. Zhou. (2017). Reconstructing Hand Gestures Using Visible Light. In *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT'17)*, Volume 1 Issue 3.
- [C.26] J. Gong, L. Li, D. Vogel, and **X. D. Yang** (2017). Cito: An Actuated Smartwatch for Extended Interactions. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'17)*, 5331-5345.
- [C.25] J. Gong, **X. D. Yang**, and P. Irani (2016). WristWhirl: One-handed Continuous Smartwatch Input using Wrist Gestures. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'16)*, 861-872.
- U [C.24] E. Chan, T. Seyed, W. Stuerzlinger, **X. D. Yang**, and F. Maurer (2016). User Elicitation on Single-hand Microgestures. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'16)*, 3403-3414. **CHI 2016 Honorable Mention Award (Top 5%)**
- [C.23] T. Seyed, **X. D. Yang**, and D. Vogel (2016). Doppio: A Reconfigurable Dual-Face Smartwatch for Tangible Interaction. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'16)*, 4675-4686.
- [C.22] T. Han, D. Ahlström, **X. D. Yang**, A. Byagowi, and P. Irani (2016). Exploring Design Factors for Transforming Passive Vibration Signals into Smartwear Interactions. In *Proceedings of NordiCHI'16*, Article No. 35.


- [C.21] M. Serrano, B. Ens, **X. D. Yang**, and P. Irani (2015). Gluey: Developing a Head-Worn Display Interface to Unify the Interaction Experience in Distributed Display Environments. In *Proceedings of the ACM International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'15)*, 161 - 171.
- [C.20] T. Seyed, **X. D. Yang**, A. Tang, S. Greenberg, J. Gu, B. Zhu, and X. Cao (2015). CipherCard: Enhancing Security on Common Touchscreen Devices using Two-factor Authentication. In *Proceedings of the IFIP Conference on Human-Computer interaction (INTERACT'15)*, 436 - 454.
- [C.19] A. Nittala, **X. D. Yang**, S. Bateman, E. Sharlin, and S. Greenberg (2015). PhoneEar: Interactions for Mobile Devices that Hear High-Frequency Sound-Encoded Data. In *Proceedings of the ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS'15)*, 174-179.
- [C.18] R. Tang, **X. D. Yang**, S. Bateman, J. Jorge, and A. Tang. (2015). Physio@Home: Exploring visual guidance and feedback techniques for physiotherapy patients at home. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'15)*, 4123-4132.
- [C.17] **X. D. Yang**, K. Hasan, N. Bruce, and P. Irani (2013). Surround-See: Enabling Peripheral Vision on Smartphones during Active Use. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'13)*, 291-300.
- [C.16] M. Nancel, O. Chapuis, W. Pietriga, **X. D. Yang**, P. Irani, and M. Beaudouin-Lafon (2013). High-Precision Pointing on Large Wall Displays using Small Handheld Devices. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'13)*, 831-840.
- [C.15] **X. D. Yang**, T. Grossman, D. Wigdor, and G. Fitzmaurice. (2012). Magic Finger: Always-Available Input through Finger Instrumentation. In *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST'12)*, 147-156.
- [C.14] H. Zhang, **X. D. Yang**, B. Ens, H. N. Liang, P. Boulanger, and P. Irani (2012). See Me, See You: A Lightweight Method for Discriminating User Touches on Tabletop Displays. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'12)*, 2327-2336.
- [C.13] K. Hasan, **X. D. Yang**, A. Bunt, and P. Irani (2012). A-Coord Input: Coordinating Auxiliary Input Streams for Augmenting Contextual Pen-Based Interactions. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'12)*, 805-814.
- [C.12] K. Hasan, **X. D. Yang**, H. N. Liang, and P. Irani. (2012). How to Position the Cursor?: An Exploration of Absolute and Relative Cursor Positioning for Back-of-Device Input. In *Proceedings of the 13th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'12)*, 103-112.
- [C.11] H. Tu, **X. D. Yang**, F. Wang, F. Tian, and X. Ren. (2012). Mode Switching Techniques through Pen and Device

Profiles. In *Proceedings of the 10th Asia Pacific Conference on Computer-Human Interaction (APCHI'12)*, 169-176.

[C.10] **X. D. Yang**, T. Grossman, P. Irani, and G. Fitzmaurice. (2011). TouchCuts and TouchZoom: Enhanced Target Selection for Touch Displays using Finger Proximity Sensing. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'11)*, 2585-2594.

[C.9] C. Williams, **X. D. Yang**, G. Partridge, J. Usiskin-Miller, A. Major, P. Irani. (2011). TZee: Exploiting the Lighting Properties of Multi-touch Tabletops for Tangible 3D Interactions. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'11)*, 1363-1372.

 [C.8] **X. D. Yang**, E. Mak, D. McCallum, P. Irani, X. Cao, and S. Izadi (2010). LensMouse: Augmenting the mouse with an interactive touch display. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'10)*, 2431-2440. **CHI 2010 Honorable Mention Award (Top 5%)**

 [C.7] **X. D. Yang**, E. Mak, P. Irani, and W. F. Bischof (2009). Dual-Surface Input: Augmenting One-Handed Interaction with Coordinated Front and Behind-the-Screen Input. In *Proceedings of the ACM International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'09)*, 10 pages, Article No.5. **MobileHCI 2009 Honorable Mention Award (Top 5%)**

[C.6] **X. D. Yang**, P. Irani, P. Boulanger, and W. F. Bischof (2009). A Model for Steering with Haptic-Force Guidance. In *Proceedings of the IFIP Conference on Human-Computer interaction (INTERACT'09)*, 465-478.

[C.5] **X. D. Yang**, W. F. Bischof, and P. Boulanger (2008). The Effects of Hand Motion on Haptic Perception of Force Direction. In *Proceedings of the Euro-haptics (EH'08)*, 355-360.

[C.4] **X. D. Yang**, W. F. Bischof, and P. Boulanger (2008). Perception of Haptic Force Magnitude during Hand Movements. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA'08)*, 129-135.

[C.3] **X. D. Yang**, W. F. Bischof, and P. Boulanger (2008). Validating the Performance of Haptic Motor Skill Training. In *Proceedings of the Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS'08)*, 129-135.

[C.2] P. Irani, C. Gutwin, and **X. D. Yang** (2006). Improving the Selection of Off-Screen Targets with Hopping. In *Proceedings of the ACM SIGCHI Conference on Human Factors in computing systems (CHI'06)*, 299-308.

[C.1] I. Cheng, R. Shen, **X. D. Yang** and Pierre Boulanger (2006). Perceptual Analysis of Level-of-Detail: The JND Approach. In *Proceedings of the IEEE International Symposium on Multimedia (ISM'06)*, 533-540.

Journal Articles

[J.3] Huawei Tu, Weiyang Huan, Xing-Dong Yang, Xiangshi Ren & Feng Tian (2021). ArmMenu: command input on

distant displays with proprioception based lateral arm movements. *Behav. Inf. Technol.* 40(13): 1428-1447, 2021.

[J.2] J. Huang, M. Kinateder, M. J. Dunn, W. Jarosz, **X. D. Yang**, and E. Cooper. (2019). An augmented reality sign-reading assistant for users with reduced vision. *PLOS ONE*, 14(1):1–9, 2019

[J.1] M. Kinateder, J. Gualtieri, M. Dunn, W. Jarosz, **X. D. Yang**, and E. Cooper. (2018). Using an Augmented Reality Device as a Distance-based Vision Aid — Promise and Limitations. *Optometry and Vision Science*, 2018.

Workshop Papers & Posters

[W.7] M. Serrano, K. Hasan, B. Ens, **X. D. Yang**, and P. Irani (2015). Smartwatches + Head-Worn Displays: the ‘New’ Smartphone. In *Workshop on Mobile Collocated Interactions: From Smartphones to Wearables (CHI’15)*.

[W.6] M. Serrano, B. Ens, **X. D. Yang**, and P. Irani (2015). Desktop-Gluey: Augmenting Desktop Environments with Wearable Devices. In *ACM MobileHCI 2015 Workshop on Mobile Collocated Interactions With Wearables (MobileHCI’15)*.

[W.5] K. Zarei-nia, **X. D. Yang**, P. Irani, N. Sepehri (2009). Evaluating Factors that Influence Path Tracing with Passive Haptic Guidance. In *Proceedings of the International Workshop on Haptic and Audio Interaction Design (HAID’09)*, 21–30.

[W.4] **X. D. Yang**, P. Irani, P. Boulanger, and W. F. Bischof (2009). One-Handed Behind-the-Display Cursor Input on Mobile Devices. In *Proceedings of the ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA’09)*, 4501–4506.

[W.3] N. Kadaba, **X. D. Yang**, and P. Irani (2009). Facilitating Multiple Target Tracking using Semantic Depth of Field (SDOF). In *Proceedings of the ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA’09)*, 4375–4380.

[W.2] **X. D. Yang** and I. Cheng (2006), 3D Skeletonization Using an Enhanced Voxel Tree. In *Proceedings of the ACM SIGGRAPH research poster and abstract*.

[W.1] P. Boulanger, G. Wu, W. F. Bischof, and **X. D. Yang** (2006). Hapto-Audio-Visual Environments for Collaborative Training of Ophthalmic Surgery over Optical Network. In *Proceedings of the IEEE International Workshop on Haptic Audio-Visual Environments and their Applications (HAVE’06)*, 21–26.

PROFESSIONAL SERVICES

Program Committee:

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| ACM Conference on Human Factors in Computing Systems (CHI) | 2018 – 2020, 2022-2023 |
| ACM Symposium on User Interface Software & Technology (UIST) | 2020 – 2022 |
| ACM Interactive Surfaces and Spaces (ISS) | 2020 – 2021 |

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|---|------------------------|
| Graphics Interface (GI) | 2015 - 2017 |
| ACM Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI) | 2014, 2016 |
| Conference Organization | |
| Data Chair (UIST) | 2022 |
| Doctoral Consortium Chair (MobileHCI) | 2021 |
| Tutorial Chair (MobileHCI) | 2019 |
| Program Chair (Chinese CHI) | 2018 - 2019 |
| Proceedings Chair (UIST) | 2016 - 2017 |
| Session Chair. Inking, Perception and Adaptation at Graphics Interface (GI) | 2014 |
| Conference Reviewer: | |
| ACM SIGGRAPH | 2020 |
| ACM Conference on Human Factors in Computing Systems (CHI) | 2010 – 2017, 2021 |
| ACM Symposium on User Interface Software & Technology (UIST) | 2012 – 2018 |
| ACM Conference on Designing Interactive Systems (DIS) | 2014 - 2018 |
| ACM Conference on Tangible, Embedded and Embodied Interaction (TEI) | 2013 - 2017 |
| ACM Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI) | 2012, 2013, 2015, 2017 |
| SIGGRAPH Asia Emerging Technologies | 2016 |
| ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS) | 2015 |
| IACR Conference on Financial Cryptography and Data Security (FC) | 2015 |
| Graphics Interface (GI) | 2009 - 2010, 2014 |
| Asia Pacific Conference on Computer-Human Interaction (APCHI) | 2012 |
| ACM Conference on Interactive Tabletops and Surfaces (ITS) | 2011- 2012 |
| IEEE Symposium on 3D User Interfaces (3DUI) | 2010, 2012, 2016 |
| IEEE Information Visualization Conference (InfoVis) | 2011 |
| IEEE Conference on Intelligent Robots and Systems (IROS) | 2010 |
| Journal Editor and Reviewer: | |
| International Journal of Human-Computer Studies – Associate Editor | 2017 - present |
| Human-Computer Interaction | 2017 |
| International Journal on Computers & Graphics | 2013, 2015 |
| International Journal of Human-Computer Studies | 2013 |
| Transactions on Haptics | 2010 |
| Grant Reviewer: | |
| Natural Sciences and Engineering Research Council of Canada Discovery Grants | 2017 |
| NSF Small Business Innovation Research | 2016 |

STUDENTS AND POST-DOCS

Post-Docs

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|---|-------------|
| Guangyu (Gus) Xia (Ph.D., CMU) With Michael Casey. | 2016 – 2017 |
| Now: Assistant Professor at NYU Shanghai | |
| Da-Yuan Huang (Ph.D., National Taiwan University) | 2016 – 2017 |

Now: Research Scientist at Huawei

Ph.D. Students

Te-Yen Wu (Ph.D., Dartmouth College) 2018 - present

Thesis: Human-Material Interaction

Led to paper publications at UIST 2019, UIST 2020, and CHI 2019, 2020, 2021.

Research internship at Microsoft Research × 2, and Facebook Reality Labs

Zheer Xu (Ph.D., Dartmouth College) 2018 - present

Thesis: AI-Driven Text Input

Led to paper publications at UIST 2019, CHI 2020, CHI 2021.

Research internship at Microsoft Research, Facebook Reality Labs, and Google Research

Josh Davis (Ph.D., Dartmouth College) 2018 - present

Thesis: Creativity for All

Led to paper publications at UIST 2019 and CHI 2020.

Research internship at Autodesk Research, Microsoft Research, and Adobe Research

Jun Gong (Ph.D., Dartmouth College) 2015 - 2020

Now: Senior Research Scientist at Apple

Thesis: Enriching Input Modalities for Computing Devices Using Wrist-Worn Sensors.

Led to paper publications at UIST 2016, 2017, 2018, 2019, and CHI 2017, 2018, 2019, 2020.

Research internships at Autodesk Research, Facebook Reality Labs, and Apple Research.

Teddy Seyed (visiting Ph.D. student, University of Calgary) 2015 - 2019

Now: Senior Researcher at Microsoft Research Redmond

Led to paper publications at INTERACT 2015, CHI 2016, 2018, 2019, and UIST 2017, 2018, 2019.

Teng Han (visiting Ph.D. student, University of Manitoba) 2017

Now: Associate Professor at the Chinese Academy of Sciences

Winter 2017 project. Explored novel haptic feedback on smart rings.

Led to paper publication at UIST 2017

Masters Students

Yonghao Shi (M.Sc., Simon Fraser University) 2022 - 2024

Thesis: TBD

Lingxi Wu (M.Sc., Simon Fraser University) 2022 - 2024

Thesis: TBD

Yuntao Pen (M.Sc., Simon Fraser University) 2022 - 2024

Thesis: TBD

Ruijiao Luo (M.Sc., Simon Fraser University) 2022 - 2024

Thesis: TBD

Ruei-Che Chang (M.Sc., Dartmouth College) 2019 - 2021

Now: Ph.D. student at Michigan

Thesis: An Accessible Circuit Prototyping Environment for People Who are Blind or Visually Impaired

Ruizhen Guo (M.Sc., Dartmouth College) 2016 - 2017

Now: SE at Microsoft.

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|---|-------------|
| Thesis: Leveraging Rear-Surface Shape Displays for 2.5D Interaction on Smartwatches. <i>Led to paper publication at UIST 2017</i> | |
| Linjun Li (M.Sc., Dartmouth College) | 2016 - 2017 |
| Now: SE at Amazon | |
| Thesis: Extending Body-Language through Actuated Static and Dynamic Auricular Postures. <i>Led to paper publication at UIST 2018.</i> | |
| Qianwen Chen (M.Sc., Dartmouth College) | 2016 - 2017 |
| Now: Interaction Designer at Google | |
| Thesis: A Semi-haptic Interface for Flute Tutoring. <i>Led to paper publication at NIME 2018.</i> | |
| Ruchir A. Patel (M.Sc., Dartmouth College) | 2016, 2018 |
| Now: SE at Wing | |
| Winter 2016 project. Novel Haptic Feedback for Smart Rings. | |
| Winter 2018 project. Self-Powered Gesture Recognition with Ambient Light. <i>Led to paper publication at UIST 2018</i> | |
| Aditya Shekhar Nittala (M.Sc., University of Calgary) | 2014 |
| Now: Assistant Professor at Calgary | |
| Summer 2014 project. Explored a technique for broadcasting data to smartphones via audio streams. <i>Led to paper publication at EICS 2015.</i> | |
| Richard Tang (M.Sc., University of Calgary) | 2014 |
| Now: SE at IBM Canada | |
| M.Sc. thesis, with Anthony Tang. Explored visual guidance and feedback techniques for physiotherapy exercises. <i>Led to paper publication at CHI 2015.</i> | |
| Khalad Hasan (M.Sc., University of Manitoba) | 2010 - 2012 |
| Now: Assistant Professor of Computer Science at the University of British Columbia (Okanagan) | |
| Summer 2011 project, with Pourang Irani. Explored the design space of multi-channel pen input. | |
| Winter 2011 project, with Pourang Irani. Explored absolute and relative cursor positioning for back-of-device input. <i>Led to paper publication at CHI 2012 and MobileHCI 2012.</i> | |
| Cary Williams (M.Sc., University of Manitoba) | 2011 |
| Summer 2011 project, with Pourang Irani. Explored tangible interface on diffuse illumination (DI) tabletops. <i>Led to paper publication at CHI 2012.</i> | |
| Thesis Committees | |
| Shuo Jiang (Ph.D. in Mechanical Engineering, Shanghai Jiao Tong University) | 2020 |
| Athina Panotopoulou (Ph.D. in Computer Science, Dartmouth College) | 2020 |
| Tianxing Li (Ph.D. in Computer Science, Dartmouth College) | 2020 |
| Qiuyu Lu (Ph.D. in Design, Tsinghua University) | 2020 |
| Teddy Seyed (Ph.D. in Computer Science, University of Calgary) | 2019 |
| Suwen Zhu (Ph.D. in Computer Science, Stony Brook University) | 2019 |

TEACHING EXPERIENCE

| | |
|--|---------------|
| Simon Fraser University - School of Computing Science Mobile Application Development and Introduction to HCI | 2022- present |
| Dartmouth College - Computer Science Department Introduction to HCI, Research Topics in HCI, and Smartphone Programming | 2016- 2021 |
| University of Calgary - Computer Science Department Sessional Instructor (winter). Instructor for Introduction to Computer Science for Computer Science Majors I. | 2014 |
| University of Alberta - Computing Science Department Teaching Assistant (fall and winter). Lab instructor for Programming with Data Structures. | 2005 - 2009 |
| University of Alberta - Computing Science Department Undergraduate Mentor. Helped 1 st year CS undergraduate students to acclimatize to university. | 2006 - 2008 |

TALKS AND PRESENTATIONS

Keynote

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| TaiCHI – Hsinchu, Taiwan “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
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Invited Talks

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| University College London – UCLIC Research Seminar Series “Creating Smart Everyday Things” | 2021 |
| University of Calgary – HCI Seminar Talk “Creating Smart Everyday Things” | 2021 |
| Autodesk Research – HCI Seminar Talk “Creating Smart Everyday Things” | 2021 |
| Massachusetts Institute of Technology - HCI Seminar Talk, Boston, MA, USA “Interactive Systems for Smart Everyday “things” with Better Sensing, UI, and Low Energy Consumption” | 2020 |
| University of Washington – DUB Seminar Talk, Seattle, WA, USA “Wearable Interactions Using Touch without a Touchscreen” | 2019 |
| Georgia Tech – GVU Center Brown Bag, Atlanta, Ga, USA “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
| Stanford University – HCI Group Brown Bag Talk, Stanford, CA, USA “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
| University of Toronto – DGP Colloquium. Toronto, ON, Canada “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
| University of Maryland, College Park – The College of Information Studies Colloquium. College Park, MD, USA “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
| UCSD – Design Lab Brown Bag Talk, San Diego, CA, USA “Wearable Interactions Using Touch without a Touchscreen” | 2018 |

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|---|------|
| Indiana University Bloomington – Department of Computer Science Colloquium. Bloomington, Indiana, USA | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| Tufts University – Computer Science Rising Stars Colloquium Series, Boston, MA, USA | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| National University of Singapore – Department of Computer Science Colloquium. Singapore | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| National Taiwan University of Science and Technology – Department of Computer Science Colloquium. Taipei, Taiwan | |
| “Wearable Interactions Using Touch without a Touchscreen” | 2018 |
| Nation University of Taiwan – IoX Center Colloquium. Taipei, Taiwan | 2018 |
| “Wearable Interaction Using Sensor, Haptics, and Interactive Module” | |
| KAIST – Department of Computer Science Colloquium. Daejeon, Republic of Korea | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| KAIST – Department of Industrial Design Colloquium. Daejeon, Republic of Korea | 2018 |
| “Wearable Interaction Using Sensor, Haptics, and Interactive Module” | |
| City University of Hong Kong – School of Creative Media Colloquium. Hong Kong, China | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| Aslla symposium – Gangneung, Republic of Korea | 2018 |
| “Input and Output on Wearable Devices Using Touch” | |
| Xiamen University – Department of Digital Media Engineering Ph.D. Summer School. Xiamen, China | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| University of New Brunswick – NextGen UX: User-Centred Design & Innovation Talk, Fredericton, NB, Canada | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| Chinese CHI – ACM CHI 2019 Workshop Talk. Montreal, QC, USA | 2018 |
| “Wearable Interactions Using Touch without a Touchscreen” | |
| University of Science and Technology of China – Department of Computer Science Summer School. Nanjing, China | 2017 |
| “Unleash Wearable Interactions from the Disappearing Touchscreens” | |
| Dartmouth CTBH – Center for Technology and Behavioral Health Seminar Series | 2017 |
| “Unleash Wearable Interactions from the Disappearing Touchscreens” | |
| Nanjing University – Department of Computer Science Summer School. Nanjing, China | 2017 |
| “Unleash Wearable Interactions from the Disappearing Touchscreens” | |
| Fudan University – Department of Computer Science Colloquium. Shanghai, China | 2017 |
| “Unleash Wearable Interactions from the Disappearing Touchscreens” | |
| Brown University – Department of Computer Science Colloquium. Providence, RI, USA | 2017 |
| “Unleash Wearable Interactions from the Disappearing Touchscreens” | |
| Graphics Interface – Montreal, QC, Canada | 2014 |
| “Towards Mobile Interactions that Go Beyond the Touchscreen” | |
| University of Waterloo – School of Computer Science. HCI Group Seminar. Waterloo, ON, Canada | 2014 |
| “Towards Mobile Interactions that Go Beyond the Touchscreen” | |
| Queen's University – School of Computing. HCI Group Seminar. Kingston, ON, Canada | 2014 |
| “Towards Mobile Interactions that Go Beyond the Touchscreen” | |

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|---|------|
| York University – Department of EE&CS. HCI Group Seminar. Toronto, ON, Canada | 2014 |
| “Towards Mobile Interactions that Go Beyond the Touchscreen” | |
| Microsoft Research Asia – HCI Group Seminar. Beijing, China | 2012 |
| “Blurring the Boundary of Direct & Indirect Input in a Shared Input Space.” | |
| Xi'an Jiaotong-Liverpool University – Department of Computer Science Seminar. Suzhou, China | 2012 |
| “Blurring the Boundary of Direct & Indirect Input in a Shared Input Space.” | |
| Kochi University of Technology – Department of Computer Science. HCI Group Seminar. Kochi, Japan | 2010 |
| “LensMouse: Augmenting the mouse with an interactive touch display.” | |

PATENTS

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|---|------|
| [P.11] Infrared-Based Gesture Sensing and Detection Systems, And Apparatuses, Software, And Methods Relating to Same. | 2020 |
| X. D. Yang, J. Gong, Y. Zhang and X. Zhou (US: 10608632) | |
| [P.10] Contact-Based Object Recognition on Interactive Fabrics using Capacitive Sensing | 2020 |
| T. Wu, A. Seyed, and X. D. Yang (Pending) | |
| [P.9] Eyes-Free Text Entry on a Fingertip Keyboard | 2020 |
| Z. Xu, J. Gong, X. Bi, and X. D. Yang (Pending) | |
| [P.8] Contextual Interactions on Interactive Fabrics with Inductive Sensing | 2020 |
| J. Gong, A. Seyed, and X. D. Yang (Pending) | |
| [P.7] Enabling Prototyping of Virtual Circuits with Physical Proxies | 2020 |
| T. Wu, J. Gong, A. Seyed, and X. D. Yang (Pending) | |
| [P.6] Inductive Sensors Including Arrays of Inductive Coils and Methods of Using Same. | 2019 |
| J. Gong and X. D. Yang (Pending) | |
| [P.5] Self-Powered Gesture Recognition with Ambient Light | 2019 |
| T. Li, Y. Li, R. Patel, X. D. Yang, and X. Zhou (Pending) | |
| [P.4] Detecting eating episodes with an ear-mounted sensor | 2019 |
| D. Kotz, J. Sorber, R. Halter, K. Odame, X. D. Yang, S. Bi, T. Wang, N. Tobias, J. Nordrum, G. Halvorsen, R. Peterson, and K. Caine (Pending) | |
| [P.3] Always-Available Input through Finger Instrumentation. | 2014 |
| X. D. Yang, T. Grossman, D. Wigdor, and G. Fitzmaurice (US: 20140098067) | |
| [P.2] Enhanced Target Selection for a Touch-Based Input Enabled User Interface. | 2013 |
| T. Grossman, G. Fitzmaurice, X. D. Yang, and P. Irani (US: 20130097550) | |
| [P.1] Computer Input and Output Peripheral Device. | 2012 |
| P. Irani, E. Mak, and X. D. Yang (US: 20120092253) | |

SELECTED PRESS

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| EurekAlert “Smart tablecloth can find fruit and help with watering the plants” | 2020 |
| Engadget “Smart fabric can recognize the food you put on the table” | 2020 |
| Speaking Out for the Blind “Research brings 3D-printed circuit education tool for people with visual impairments” | 2020 |
| Scienmag “Research Brings Tech Tutorials to People with Visual Impairments” | 2020 |

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|---|------|
| Huckster “TipText Lets You Enter Text Using Thumb-Tip Gestures” | 2019 |
| EurekAlert “Dartmouth lab introduces the next wave of interactive technology” | 2019 |
| Phys.Org “Energy harvesting and innovative inputs highlight tech show gadgetry” | 2018 |
| EurekAlert “Energy harvesting and innovative inputs highlight tech show gadgetry” | 2018 |
| Seeker “Reading Emotions from Ear Movements” | 2018 |
| TechXplore “Researchers bring smartwatch innovations to CHI2018” | 2018 |
| WatchPro “Dartmouth College aims to eliminate technical and practical barriers of smartwatches” | 2018 |
| Huckster.io “WrisText: Smartwatch Text Entry via Wrist Movements” | 2018 |
| Geeky Gadgets “Smartwatch Hand Gesture Typing App Concept WrisTex” | 2018 |
| ACM TechNews - SIGCHI Edition “Dartmouth to Debut Wearables That Warn and Wow at UIST 2017” | 2017 |
| ACM TechNews - SIGCHI Edition “Q&A With Ph.D. Student and Smartwatch Designer Jun Gong” | 2017 |
| EurekAlert “Dartmouth to Debut Wearables that Warn and Wow at UIST 2017” | 2017 |
| WEARABLE “RetroShape Smartwatch Concept Provides Users with Tactile Feedback” | 2017 |
| TechRadar “This Giant Smartwatch Prototype Has a Shape-Deforming Backplate” | 2017 |
| MIT Technology Review “This 3-in-1 Phone Will Make You Want to Share It with Strangers” | 2017 |
| Digital Trends “This Absurdly Overengineered Smartwatch Crawls, Tilts, and Slides on Your Wrist” | 2017 |
| EurekAlert “Dartmouth-led Team Develops Smartwatch with All the Moves” | 2017 |
| Wall Street Journal “The Smartwatch You Can Use with One Hand” | 2016 |
| Gizmodo “Smartwatch Prototype to Use Wrist as Joystick” | 2016 |
| TechCrunch “WristWhirl lets you control your smartwatch with hand gestures” | 2016 |
| Phys.Org “Doppio: Researchers unveil dual-screen smartwatch” | 2016 |
| Gizmodo “A Multi-Screen Smartwatch Might Actually Be a Brilliant Idea” | 2016 |
| Verge “Smartwatch concept puts two screens on your wrist” | 2016 |
| New Scientist “A phone, or an all-seeing sentry at your command?” | 2013 |
| Discovery News “A Phone That Can See Its Surroundings.” | 2013 |
| Mashable “Lens Gives Your Phone Peripheral Vision.” | 2013 |
| Discovery News “Magic Finger' Swipes Smartphone Remotely.” | 2012 |
| NBC News “Magic Finger Turns Everything into a Touch Surface.” | 2012 |
| Engadget “'Magic Finger' Reads Gestures from any Surface.” | 2012 |
| Gizmodo “Magic Thimble Turns the Entire World into a Touch Surface.” | 2012 |
| Mashable “Send Texts from Your Pocket with This Handy Ring.” | 2012 |
| Slashdot “Magic Finger Turns Any Surface into a Touch Interface.” | 2012 |
| Phys.Org “Magic Finger Device Suggests New Day for Calling up Content.” | 2012 |
| Hackaday “Magic Finger Input Device is a Camera on Your Finger Tip.” | 2012 |
| Winnipeg SUN “Smart Touchscreen Built at U of M.” | 2011 |