

Xiaojun Bi (November 2021)

Assistant Professor
Department of Computer Science
Stony Brook University

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My research lies at the intersection of Human Computer Interaction (HCI) and Artificial Intelligence (AI), with a primary focus on *AI-powered Interaction*. More specifically, my two research directions are (1) creating mathematical models to understand, explain, and predict users' interaction with computers, and (2) researching and developing *intelligent* input technologies.

1. Education

Ph.D.	Department of Computer Science, University of Toronto	November 2011
	Ph.D. Supervisor: Prof. Ravin Balakrishnan	
Master	Department of Computer Science, Tsinghua University	August 2006
Bachelor	Department of Automation, Tsinghua University	August 2003

2. Professional Appointments

Assistant Professor January 2017 – Present
Department of Computer Science
Stony Brook University

Research Scientist November 2012 – December 2016
Mobile Interaction Research Group
Google Inc., Mountain View, USA

Postdoctoral Research Scientist November 2011 – October 2012
Mobile Interaction Research Group,
Google Inc., Mountain View, USA

3. Honors and Awards (10 Paper Awards)

- 2020 ACM UIST Best Paper Honorable Mention Award
- 2019 ACM UIST Best Paper Award
- 2019 ACM CHI Best Paper Honorable Mention Award
- 2019 Research Excellence Award (Department of Computer Science, Stony Brook University)
- 2018 ACM CHI Best Paper Honorable Mention Award
- 2018 ACM ISS Best Paper Honorable Mention Award
- 2018 Google Faculty Research Awards
- 2017 ACM CHI Best Paper Honorable Mention Award
- 2017 Google Faculty Research Awards
- 2021 Chinese CHI Best Paper Honorable Mention Award
- 2015 ACM CHI Best Paper Honorable Mention Award
- 2013 Google Influential Paper Award
- 2011 ACM CHI Best Paper Honorable Mention Award

4. Publications

Publication Summary

Total Citations: 2244, H-Index: 28 (Google Scholar)

Summary statistics of publications in top venues of HCI: *CHI* (28), *UIST* (12).

My SBU students/advises are underlined.

Referred Conference Publications

2021

UIST 2021

[51] Michael Wang*, Hang Zhao*, Xiaolei Zhou, Xiangshi Ren, **Xiaojun Bi** (2021) "Variance and Distribution Models for Steering Tasks". In *Proceedings of UIST 2021 - The ACM Symposium on User Interface Software and Technology*. 1122 - 1143. [Acceptance Rate: 25.9%]

* Co-first authors.

UIST 2021

[50] Maozheng Zhao, Wenzhe Cui, IV Ramakrishnan, Shumin Zhai, **Xiaojun Bi** (2021) "Integrated Voice and Touch Based Multimodal Text Editing Techniques for Smartphones.". In *Proceedings of UIST 2021 - The ACM Symposium on User Interface Software and Technology*. 162 - 178. [Acceptance Rate: 25.9%]

UIST 2021

[49] Yan Ma, Shumin Zhai, IV Ramakrishnan, **Xiaojun Bi** (2021) " Modeling Touch Point Distribution with Rotational Dual Gaussian Model.". In *Proceedings of UIST 2021 - The ACM Symposium on User Interface Software and Technology*. 1197 - 1209. [Acceptance Rate: 25.9%]

CHI 2021

[48] Wenzhe Cui, Suwen Zhu, Zhi Li, Zheer Xu, Xing-Dong Yang, IV Ramakrishnan, **Xiaojun Bi** (2021) "BackSwipe: Back-of-device Word-Gesture Interaction on Smartphones.". In *Proceedings of CHI 2021 - the SIGCHI Conference on Human Factors in Computing Systems*. Article 196, 1–12. [Acceptance Rate: 26.3%]

ChineseCHI 2021

[47] Yu-Jung Ko, Hang Zhao, IV Ramakrishnan, Shumin Zhai, Xiaojun Bi (2021) "Issues Related to Using Finger-Fitts law to Model One-Dimensional Touch Pointing Tasks". In *The Ninth International Symposium of Chinese CHI (Chinese CHI 2021)*. Accepted. 10 pages.

Best Paper Honorable Mention Award

GI 2021

[46] Zhi Li, Maozheng Zhao, Yifan Wang, Sina Rashidian, Furqan Baig, Rui Liu, Wanyu Liu, Michel Beaudouin-Lafon, Brooke Ellison, Fusheng Wang, IV. Ramakrishnan, **Xiaojun Bi** (2021) "BayesGaze: A Bayesian Approach to Eye-Gaze Based Target Selection.". In *Proceedings of Graphics Interface 2021*. Virtual Event, 28 - 29 May 2021, 231 – 240.

GI 2021

[45] Shirin Feiz, Anatoliy Borodin, **Xiaojun Bi**, IV. Ramakrishnan, (2021) "Towards Enabling Blind People to Fill Out Paper Forms with a Wearable Smartphone Assistant." In *Proceedings of Graphics Interface 2021*. Virtual Event, 28 - 29 May 2021, 156 - 165.

MobileHCI 2021

[44] Yu-Jung Ko, Aini Putkonen, Ali Selman Aydin, Shirin Feiz, Yuheng Wang, Vikas Ashok, IV Ramakrishnan, Antti Oulasvirta, **Xiaojun Bi** (2021) "Modeling Gliding-based Target Selection for Blind Touchscreen Users" In *Proceedings of MobileHCI 2021- The ACM Conference on Human computer interaction with Mobile Devices and Services*. Article No. 29 pp 1- 14.

MobileHCI 2021

[43] Luis Leiva, Sunjun Kim, Wenzhe Cui, **Xiaojun Bi** Antti Oulasvirta (2021) "How We Swipe: A Large-scale Shape-writing Dataset and Empirical Findings" In *Proceedings of MobileHCI 2021- The ACM Conference on Human computer interaction with Mobile Devices and Services*. Article No. 11. pp 1 - 13.

2020

UIST 2020

[42] Wenzhe Cui, Suwen Zhu, Mingrui Ray Zhang, H. Andrew Schwartz, Jacob O. Wobbrock, **Xiaojun Bi** (2020) "JustCorrect: Intelligent Post Hoc Text Correction Techniques on Smartphones.". In *Proceedings of UIST 2020 - The ACM Symposium on User Interface Software and Technology*. 487– 499. [Acceptance Rate: 21.56%]

UIST 2020

[41] Yu-Jung Ko, Hang Zhao, Yoonsang Kim, IV Ramakrishnan, Shumin Zhai, **Xiaojun Bi** (2020) "Modeling Two Dimensional Touch Pointing.". In *Proceedings of UIST 2020 - The ACM Symposium on User Interface Software and Technology*. 858 – 868. [Acceptance Rate: 21.56%] **Best Paper Honorable Mention Award**

CHI 2020

[40] Suwen Zhu, Yoonsang Kim, Jingjie Zheng, Jennifer Yi Luo, Ryan Qin, Liuping Wang, Xiangmin Fan, Feng Tian, **Xiaojun Bi** (2020) "Using Bayes' Theorem for Command Input: Principle, Models, and Applications.". In *Proceedings of CHI 2020 - the SIGCHI Conference on Human Factors in Computing Systems*. 1 – 15. [Acceptance Rate: 24.31%]

CHI 2020

[39] Xin Yi, Chen Wang, **Xiaojun Bi**, Yuanchun Shi (2020) "PalmBoard: Leveraging Implicit Touch Pressure in Statistical Decoding for Indirect Text Entry.". In *Proceedings of CHI 2020 - the SIGCHI Conference on Human Factors in Computing Systems*. 1 – 13. [Acceptance Rate: 24.31%]

MobileHCI 2020

[38] Conor Kelton, Jihoon Ryoo, Aruna Balasubramanian, **Xiaojun Bi**, Samir R Das (2020) "Modeling User-Centered Page Load Time for Smartphones" In *Proceedings of MobileHCI*

2020- *The ACM Conference on Human computer interaction with Mobile Devices and Services*. 1 – 12. [Acceptance Rate: 23%]

2019

CHI 2019

[37] Wenzhe Cui, Jingjie Zheng, Blaine Lewis, Daniel Vogel, and **Xiaojun Bi**. 2019. HotStrokes: Word-Gesture Shortcuts on a Trackpad. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 165, 13 pages. [Acceptance Rate: 23.8%]

CHI 2019

[36] Suwen Zhu, Jingjie Zheng, Shumin Zhai, and **Xiaojun Bi**. 2019. i'sFree: Eyes-Free Gesture Typing via a Touch-Enabled Remote Control. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 448, 12 pages. [Acceptance Rate: 23.8%]

CHI 2019

[35] Syed Masum Billah, Yu-Jung Ko, Vikas Ashok, **Xiaojun Bi**, and IV Ramakrishnan. 2019. Accessible Gesture Typing for Non-Visual Text Entry on Smartphones. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 376, 12 pages. [Acceptance Rate: 23.8%]

CHI 2019

[34] Weinan Shi, Chun Yu, Shuyi Fan, Feng Wang, Tong Wang, Xin Yi, **Xiaojun Bi**, and Yuanchun Shi. 2019. VIPBoard: Improving Screen-Reader Keyboard for Visually Impaired People with Character-Level Auto Correction. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 517, 12 pages. [Acceptance Rate: 23.8%] **Best Paper Honorable Mention Award**

CHI 2019

[33] Feng Tian, Xiangmin Fan, Junjun Fan, Yicheng Zhu, Jing Gao, Dakuo Wang, **Xiaojun Bi**, and Hongan Wang. 2019. What Can Gestures Tell?: Detecting Motor Impairment in Early Parkinson's from Common Touch Gestural Interactions. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 83, 14 pages. [Acceptance Rate: 23.8%]

CHI 2019

[32] Yiqin Lu, Chun Yu, Shuyi Fan, **Xiaojun Bi**, and Yuanchun Shi. 2019. Typing on Split Keyboards with Peripheral Vision. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Paper 200, 12 pages. [Acceptance Rate: 23.8%]

UIST 2019

[31] Zheer Xu, Pui Chong Wong, Jun Gong, Te-Yen Wu, Aditya Shekhar Nittala, **Xiaojun Bi**, Jürgen Steimle, Hongbo Fu, Kening Zhu, Xing-Dong Yang 2019. TipText: Eyes-Free Text Entry on a Fingertip In *Proceedings of the 32th Annual ACM Symposium on User Interface Software and Technology (UIST '19)*. ACM, New York, NY, USA, ACM, New York, NY, USA, 10 pages. [Acceptance Rate: 24.4%] **Best Paper Award**

2018

CHI 2018

[30] Suwen Zhu, Tianyao Luo, **Xiaojun Bi**, and Shumin Zhai. 2018. Typing on an Invisible Keyboard. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Paper 439, 13 pages. [Acceptance Rate: 25.7%]

CHI 2018

[29] Jun Gong, Zheer Xu, Qifan Guo, Teddy Seyed, Xiang 'Anthony' Chen, **Xiaojun Bi**, and Xing-Dong Yang. 2018. WrisText: One-handed Text Entry on Smartwatch using Wrist Gestures. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Paper 181, 14 pages. [Acceptance Rate: 25.7%] **Best Paper Honorable Mention Award**

CHI 2018

[28] Jingjie Zheng, **Xiaojun Bi**, Kun Li, Yang Li, and Shumin Zhai. 2018. M3 Gesture Menu: Design and Experimental Analyses of Marking Menus for Touchscreen Mobile Interaction. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Paper 249, 14 pages. [Acceptance Rate: 25.7%]

UIST 2018

[27] Jian Xu, Suwen Zhu, Aruna Balasubramanian*, **Xiaojun Bi***, Roy Shilkrot* (2018) "Ultra-Low-Power Mode for Screenless Mobile Interaction". In *Proceedings of UIST 2018 - The ACM Symposium on User Interface Software and Technology*. 557 – 568 (* alphabetical order). [Acceptance Rate: 21.3%]

ASSETS 2018

[26] Yu-Hao Lin, Suwen Zhu, Yu-Jung Ko, Wenzhe Cui, **Xiaojun Bi**, 2018 "Why Is Gesture Typing Promising for Older Adults? Comparing Gesture and Tap Typing Behavior of Older with Young Adults". In *Proceedings of ASSETS 2018 - The 20th International ACM SIGACCESS Conference on Computers and Accessibility*. 271 – 281. [Acceptance Rate: 26%]

ISS 2018

[25] Ryan Qin, Suwen Zhu, Yu-Hao Lin, Yu-Jung Ko, and **Xiaojun Bi**. 2018. Optimal-T9: An Optimized T9-like Keyboard for Small Touchscreen Devices. In *Proceedings of the 2018 ACM International Conference on Interactive Surfaces and Spaces (ISS '18)*. ACM, New York, NY, USA, 137-146. [Acceptance Rate: 26.7%] **Best Paper Honorable Mention Award**

2017

CHI 2017

[24] Xin Yi, Chun Yu, Weijie Xu, **Xiaojun Bi**, and Yuanchun Shi. 2017. COMPASS: Rotational Keyboard on Non-Touch Smartwatches. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. 705-715. [Acceptance Rate: 25%] **Best Paper Honorable Mention Award**

CHI 2017

[23] Xin Yi, Chun Yu, Weinan Shi, **Xiaojun Bi**, and Yuanchun Shi. 2017. Word Clarity as a Metric in Sampling Keyboard Test Sets. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. 4216-4228. [Acceptance Rate: 25%]

UIST 2017

[22] Jessalyn Alvina, Carla F. Griggio, **Xiaojun Bi**, and Wendy E. Mackay. 2017. CommandBoard: Creating a General-Purpose Command Gesture Input Space for Soft Keyboard. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17)*. 17-28. [Acceptance Rate: 22.5%]

2016

UIST 2016

[21] **Xiaojun Bi**, Shumin Zhai (2016) "Predicting Finger-Touch Accuracy Based on the Dual Gaussian Distribution Model". In *Proceedings of UIST 2016 - The ACM Symposium on User Interface Software and Technology*. 313 – 319. [Acceptance Rate: 20.6%]

CHI 2016

[20] **Xiaojun Bi**, Shumin Zhai (2016) "IJQwerty: What Difference Does One Key Change Make? Gesture Typing Keyboard Optimization Bounded by One Key Position Change from Qwerty". In *Proceedings of CHI 2016 - the SIGCHI Conference on Human Factors in Computing Systems*. 49 - 58. [Acceptance Rate: 23.4%]

CHI 2016

[19] Chun Yu, Hongyi Wen, Wei Xiong, **Xiaojun Bi**, Yuanchun Shi (2016) "Investigating Effects of Post-selection Feedback for Acquiring Ultra-Small Targets on Touchscreen". In *Proceedings of CHI 2016 - the SIGCHI Conference on Human Factors in Computing Systems*. 4699 - 4710 [Acceptance Rate: 23.4%]

2015

CHI 2015

[18] Brian Smith*, **Xiaojun Bi**, Shumin Zhai (2015) "Optimizing Touchscreen Keyboards for Gesture Typing". In *Proceedings of CHI 2015 - the SIGCHI Conference on Human Factors in Computing Systems*. 3365 - 3374. [Acceptance Rate: 23%]

*Brian Smith was a summer intern supervised by Xiaojun Bi at Google.

CHI 2015

[17] Andrew Fowler, Kurt Partridge, Ciprian Chelba, **Xiaojun Bi**, Tom Ouyang, Shumin Zhai (2015) "Effects of Language Modeling and its Personalization on Touchscreen Typing Performance". In *Proceedings of CHI 2015 - the SIGCHI Conference on Human Factors in Computing Systems*. 649 – 658. [Acceptance Rate: 23%] **Best Paper Honorable Mention Award**

2014

CHI 2014

[16] **Xiaojun Bi**, Tom Ouyang, Shumin Zhai (2014) "Both Complete and Correct? Multi-Objective Optimization of Touchscreen Keyboard". In *Proceedings of CHI 2014 – the SIGCHI Conference on Human Factors in Computing Systems*. 2297-2306. [Acceptance Rate: 22.8%].

2013

UIST 2013

[15] **Xiaojun Bi**, Shumin Zhai (2013) "Bayesian Touch - A Statistic Criterion of Target Selection with Finger Touch". In *Proceedings of UIST 2013 – The ACM Symposium on User Interface Software and Technology*. 51-60. [Acceptance Rate: 20%]

CHI 2013

[14] **Xiaojun Bi**, Yang Li, Shumin Zhai (2013) “FFitts Law: Modeling Finger Touch with Fitts' Law”. In *Proceedings of CHI 2013 – the SIGCHI Conference on Human Factors in Computing Systems*. 1363-1372. [Acceptance Rate: 20%] **Google Influential Paper Award**

CHI 2013

[13] **Xiaojun Bi**, Shiri Azenkot, Kurt Partridge, Shumin Zhai (2013) “Octopus: Evaluating Touchscreen Keyboard Correction and Recognition Algorithms via *Remulation*”. In *Proceedings of CHI 2013 – the SIGCHI Conference on Human Factors in Computing Systems*. 543-552. [Acceptance Rate: 20%]

2012

UIST 2012

[12] **Xiaojun Bi**, Ciprian Chelba, Tom Ouyang, Kurt Partridge, and Shumin Zhai. (2012) “Bimanual Gesture Keyboard”. In *Proceedings of UIST 2012 – The ACM Symposium on User Interface Software and Technology*. 137-146. [Acceptance Rate: 21.5%]

CHI 2012

[11] Ken Hinckley, **Xiaojun Bi**, Michel Pahud, and Bill Buxton (2012) “Informal Information Gathering Techniques for Active Reading”. In *Proceedings of CHI 2012 – the SIGCHI Conference on Human Factors in Computing Systems*. 1893-1896. [Acceptance Rate: 23%]

CHI 2012

[10] Yizhong Xin, **Xiaojun Bi**, and Xiangshi Ren. (2012) “Natural Use Profiles for the Pen: An Empirical Exploration of Pressure, Tilt, and Azimuth”. In *Proceedings of CHI 2012 – the SIGCHI Conference on Human Factors in Computing Systems*. 801-804. [Acceptance Rate: 23%]

Before 2012

CHI 2011

[9] **Xiaojun Bi**, Tovi Grossman, Justin Matejka, George Fitzmaurice. (2011) “Magic Desk: Bringing Multi-Touch Surfaces into Desktop Work”. In *Proceedings of CHI 2011 – the SIGCHI Conference on Human Factors in Computing Systems*. 2511-2520. [Acceptance Rate: 26%] **Best Paper Honorable Mention Award**

CHI 2011

[8] Yizhong Xin, **Xiaojun Bi**, Xiangshi Ren. (2011) “Acquiring and Pointing: An Empirical Study of Pen Tilt-Based Interaction”. In *Proceedings of CHI 2011 – the SIGCHI Conference on Human Factors in Computing Systems*. 849-858. [Acceptance Rate: 26%]

CHI 2010

[7] **Xiaojun Bi**, Seok-Hyung Bae, Ravin Balakrishnan. (2010) “Effects of Interior Bezels of Tiled-Monitor Large Displays on Visual Search, Tunnel Steering, and Target Selection”. In *Proceedings of CHI 2010 – the SIGCHI Conference on Human Factors in Computing Systems*. 65-74. [Acceptance Rate: 22%]

CHI 2010

[6] **Xiaojun Bi**, Barton A. Smith, Shumin Zhai (2010) “Quasi-Qwerty Soft Keyboard Optimization”. In *Proceedings of CHI 2010 – the SIGCHI Conference on Human Factors in*

Computing Systems. 283-286. [Acceptance Rate: 22%]

CHI 2009

[5] **Xiaojun Bi**, Ravin Balakrishnan. (2009) “Comparing Usage of a Large High-Resolution Display to Single or Dual Desktop Displays for Daily Work”. In *Proceedings of CHI 2009 – the SIGCHI Conference on Human Factors in Computing Systems*. 1005-1014. [Acceptance Rate: 25%]

UIST 2008

[4] **Xiaojun Bi**, Tomer Moscovich, Gonzalo Ramos, Ravin Balakrishnan, Ken Hinckley (2008) “An Exploration of Pen Rolling for Pen-based Interaction”. In *Proceedings of UIST 2008 - The ACM Symposium on User Interface Software and Technology*. 191-200. [Acceptance Rate: 18%]

MobileHCI 2010

[3] James Scott, Shahram Izadi, Leila Sadat Rezai, Dominika Ruzskowski, **Xiaojun Bi**, Ravin Balakrishnan, (2010) “RearType: Text Entry Using Keys on the Back of a Device”. In *Proceedings of MobileHCI - The ACM conference on Human computer interaction with mobile devices and services*. 171-180. [Acceptance Rate: 23%]

TableTop 2006

[2] **Xiaojun Bi**, Yuanchun Shi, Xiaojie Chen. (2006) “uPen: A Smart Pen-liked Device for Facilitating Interaction on Large Displays”. In *Proceedings of IEEE TableTop Conference on Horizontal Interactive Human-Computer Systems 2006*. 160-168.

EUSAI 2005

[1] **Xiaojun Bi**, Yuanchun Shi, Xiaojie Chen, Peifeng Xiang (2005) "Facilitating Interaction with Large Displays in Smart Spaces". In *Soc-EUSAI, Smart Objects and Ambient Intelligence Conference*. France, October, 2005, 105-110.

Journal Publications

[2] **Xiaojun Bi**, Seok-Hyung Bae, Ravin Balakrishnan. (2014) “WallTop: Manage Overflowing Windows on a Large Display”. *Human-Computer Interaction*. Volume 29, Issue 2, 153-203.

[1] **Xiaojun Bi**, Barton A. Smith, Shumin Zhai. (2012) “Multilingual Touchscreen Keyboard Design and Optimization”. *Human-Computer Interaction*. Volume 27, Issue 4, 352-382.

Workshop Papers

[5]. **Xiaojun Bi**, Lu Xiao, Feng Tian, Xianghua (Sharon) Ding, and Yong Ming Kow. (2016). Chinese CHI 2016 Symposium. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)*. 3532–3535.

[4]. **Xiaojun Bi**, Brian A. Smith and Shumin Zhai (2015) Keyboard Layout Optimization. In *CHI 2015 Workshop on Principles, Techniques and Perspectives on Optimization and HCI*.

[3]. Per Ola Kristensson, **Xiaojun Bi**, Andrew Howes, Antti Oulasvirta, Roderick Murray-Smith, Harold Thimbleby, John Williamson, Shumin Zhai (2015) Principles, Techniques and Perspectives on Optimization and HCI. In *CHI EA 2015 - the SIGCHI Conference on Human Factors in Computing Systems*. 2441-2444.

[2]. Hao-Chuan Wang, Gary Hsieh, **Xiaojun Bi**, Henry B. L. Duh, Yihsiu Chen (2015) Chinese CHI Symposium in CHI 2015. In *CHI EA 2015 - the SIGCHI Conference on Human Factors in Computing Systems*. 2313-2315.

[1]. Shumin Zhai, **Xiaojun Bi**, Shiri Azenkot, Kurt Partridge (2013) "The Grand Challenge of Automated Evaluation of Text Input Systems". In *CHI 2013 Workshop on Grand Challenges in Text Entry*.

Book Chapters and Edited Books

[4] Antti Oulasvirta, Per Ola Kristensson, **Xiaojun Bi**, Andrew Howes, editors. Computational interaction. *Oxford University Press*; 2018 Jan 10.

[3] **Xiaojun Bi**, Brian Smith, Tom Ouyang, Shumin Zhai. Soft Keyboard Performance Optimization. Chapter 5 in Antti Oulasvirta, Per Ola Kristensson, Xiaojun Bi, Andrew Howes, (eds.), *Computational Interaction*. Oxford: Oxford University Press, 121 – 152.

[2] Suwen Zhu, Xiangmin Fan, Feng Tian, **Xiaojun Bi**. Bayesian Command Selection. Chapter 4 In John Williamson, Antti Oulasvirta, Per Ola Kristensson, Nikola Banovic (eds.), *Bayesian Methods for Interaction and Design*. Cambridge: Cambridge University Press, 129 – 156. (In press)

[1] Mingrui “Ray” Zhang, He Wen, Wenzhe Cui, Suwen Zhu, H.Andrew Schwartz, **Xiaojun Bi** and Jacob O. Wobbrock. (2021). AI-driven Intelligent Text Correction Techniques for Mobile Text Entry. Chapter 6 in Yang Li & Otmar Hilliges (eds.), *Artificial Intelligence for Human Computer Interaction: A Modern Approach*. Switzerland: Springer. (In press)

5. Research Grants

11 Awarded Grants

Total for SBU: \$3,320,137 My Share: \$1,729,779

- 1. National Science Foundation
08/2021 – 07/2024
Title: Bayesian-centric Multimodal Hands-free Computer Interaction Technologies for People with Quadriplegia
PI: Xiaojun Bi, Co-PI: IV Ramakrishnan, Brooke Ellison
Total Amount: \$399,869
My Share: \$199,945 (50%)
- 2. National Science Foundation
09/2018 – 08/2021
Title: IIS:CHS:SMALL: Establishing Action Laws for Touch Interaction
Sole-PI: Xiaojun Bi
Total Amount: \$315,478
My Share: \$315,478 (100%)
- 3. National Institutes of Health R01 EY 030085-01A1
3/1/2020 – 2/28/2023

Title: Space-Compacting Magnification Augmented with Natural Gestures and Keyboardless Text Entry for Low Vision Smartphone Interaction
PI: IV Ramakrishnan, **Co-PI: Xiaojun Bi**, Christian Luhmann
Total Amount: \$1,178,970,
My Share: \$500,000 (40%)

- 4. Medical Research Program, Department of Defense
1/2022 – 1/2024
Title: Integrative Multimodal Communication for ALS Patients Using iPad
PI: Fusheng Wang, **Co-PI: Xiaojun Bi**, Nurcan Gursory,
Total Amount: \$777,322
My Share: \$259,307 (33%)
- 5. Google Research Gift Fund
8/2021 – 8/2022
Title: Voice and Touch Based Multimodal Text Editing and Correction Techniques on Mobile Devices
Sole-PI: Xiaojun Bi
Total Amount: \$120,000
My Share: \$120,000 (100%)
- 6. SBU Office of the Vice President for Research Seed Grant
4/2021 – 1/2022
Title: Robotic Arm Augmented Wheelchair for Enabling Independent Living of People with Quadriplegia
PI: Nilanjan Chakraborty, **Co-PI: Xiaojun Bi**, Haibin Ling, IV Ramakrishnan, Brooke Ellison
Total Amount: \$ 65,000
My Share: \$13,000 (20%)
- 7. Google Research Gift Fund
1/2020 – 1/2021
Title: Probabilistic Modeling of Touch Input in Human-Computer Interactions
Sole-PI: Xiaojun Bi
Total Amount: \$120,000
My Share: \$120,000 (100%)
- 8. ALS Association 20-MALS-538
1/31/2020 – 1/30/2022
Title: Eye Gaze-Based Technology Using Apple Truth Depth Camera to Enable Communication for ALS Patients
PI: Fusheng Wang, **Co-PI: Xiaojun Bi**.
Total Amount: \$199,998,
My Share: \$99,999 (50%)
- 9. SBU Office of the Vice President for Research Seed Grant
8/2020 – 1/2021

Title: Next Generation Orally-Activated Multi-Modal Assistive Technologies for People with Severe Disabilities

PI: Brooke Ellison, **Co-PI: Xiaojun Bi**, Mikhail Gouzman, Kimberly Noel

Total Amount: \$ 55,000

My Share: \$13,750 (25%)

- 10. Google Faculty Research Award (2018)
Title: Gesture Typing Based Authentication Methods on Smartphones.
04/2018 – 04/2019
Sole-PI: Xiaojun Bi
Total Amount: \$50,000
My Share: \$50,000 (100%)
- 11. Google Faculty Research Award (2017)
Title: Improving Touchscreen UI Design with Touch Modeling.
04/2017 – 04/2018
Sole-PI: Xiaojun Bi
Total: Amount: \$38,500
My Share: \$38,500 (100%)

Pending Proposal

- CAREER proposal for National Science Foundation
Title: CAREER: Foundations and Applications of Probabilistic Input Models for Interaction with Computers
PI: Xiaojun Bi
Total Amount: \$534,401
Submitted in July 2021. Under review now.

6. Teaching

- **Graduate Courses**
CSE 518 Foundations of Human Computer Interaction (Fall 2020)
Mean (Std) of Overall Rating (1 – worst, 5 – best): 4.83(0.38)
Enrolled Students: 74

CSE 518 Foundations of Human Computer Interaction (Fall 2019)
Mean (Std) of Overall Rating: 4.66(0.63)
Enrolled Students: 80

CSE 594 Advanced Topics in Human Computer Interaction (Spring 2018)
Mean (Std) of Overall Rating: 4.88(0.32)
Enrolled Students: 19

CSE 594 Advanced Topics in Mobile Human Computer Interaction (Fall 2018)
Mean (Std) of Overall Rating: 4.88(0.33)
Enrolled Students: 39

CSE 652 Seminar in User Interfaces (Fall 2017)

Mean (Std) of Overall Rating: 5(0)

Enrolled Students: 10

- **Undergraduate Courses**

CSE/ISE/EST 323. Human Computer Interaction (Spring 2021)

Mean (Std) of Overall Rating: 4.62(0.48)

Enrollment: 59

CSE/ISE/EST 323. Human Computer Interaction (Spring 2020)

No official rating, because the teaching was disrupted by COVID19.

Enrollment: 60

7. Service

External Professional Service

- 2021 Sub-committee Chair, ACM CHI 2022 program committee
- 2020 Associate Chair, ACM CHI 2021 program committee
- 2019 Associate Chair, ACM CHI 2020 program committee
- 2019 Co-chair, The 5th Summer School on Computational Interaction
- 2018 Associate Chair, ACM CHI 2019 program committee
- 2018 Panelist, National Science Foundation
- 2017 Associate Chair, ACM CHI 2018 program committee
- 2017 Co-Organizer. ACM CHI 2017 Workshop on Ubiquitous Text Interaction, May 6, 2017, Denver, USA
- 2017 Co-Organizer. Dagstuhl Seminar on Computational Interactivity, June 5 – June 8, 2017, Dagstuhl, Germany
- 2016 Associate Chair, ACM CHI 2017 program committee
- 2016 Associate Chair, ACM UIST 2016 program committee
- 2015 Associate Chair, ACM CHI 2016 program committee
- 2015 Co-Organizer. ACM CHI 2015 Workshop on Principles, Techniques, and Perspectives on Optimization and HCI, May, 2015, Seoul, South Korea
- 2013 Associate Chair, ACM UIST 2013 program committee

Department Service

- 2017, 2018, 2019, 2020, 2021. Committee Member. Graduate Student Admission Committee
- 2021 Committee Member. Graduate Grievance and Appeals Committee

University Service

- 2017, 2018, 2019, 2021 Co-organizer, Computer Science and Informatics Summer Research Experience Program (CSIRE)

8. Students and Mentoring

Graduated PhD Students

Suwen Zhu First Employment: Grammarly Inc. San Francisco
Dissertation: *Model-Based Intelligent Interactions on Touch Surfaces*. December 2019

Current PhD Students

Yu-Jung Ko	2017 – Present (Passed Prelim), Expected to graduate in Fall 2021
Wenzhe Cui	2017 – Present (Passed RPE)
Maozheng Zhao	2019 – Present (Passed RPE)
Zhi Li	2020 – Present (Passed RPE)
Dan Zhang	2021 – Present (Passed RPE)
Yan Ma	2021 – Present
Jeremy Chu	2021 – Present
Hang Zhao	2021 – Present

Master Students:

Jagrati Bhardwaj (2019 – 2020)
Reema Mittal (2019 – 2020)
Srinivasa Dilip Polepalli (2019 – 2020)
Ravali Sambu (2019 – 2020)
Hang Zhao (2019 – 2020)
Anudeep Medishetti (2019 – 2020)
Tianyao Luo (2017 – 2018)
Irfan Ahmed (2020 – 2021)
Shubham Agrawal (2020 – 2021)
Ananya Goel (2020 – 2021)
Kajal Toshniwal (2020 – 2021)

Undergraduate Students:

Yifan Wang (2019 – 2020) [co-supervised with Fusheng Wang]
Michael Wang (2020- 2021)

High School Students:

Hannah Zhang (2020)
Jaiden Reddy (2020)
Trevor Cai (2020)
Jiayang Wang (2020)
Asweel Mehaboob (2019)
Ryan Qin (2017, 2018)
Justin Wei (2017)
Jennifer Luo (2018)
Neha Jannu (2018)

Ph.D. Dissertation Committee: Ziqiao Guan, Xin Qi, Ali Aydin, Syed Masum Billah, Vikas Ashok, Koosha Mirhosseini, Ji Hwan Park, Chengfeng Wen

Research Proficiency Exam (RPE) Committee: Guo Yang, Xi Zhang, Xuan Li, Yicheng Lin, Yu-Hao Lin, Xinyu Dong, Xi Han, Anand Aiyer, Hae-Na Lee, Dibyendu Das, Utku Uckun, Shirin Feiz, Sagnik Das

Master Dissertation Committee: Fathima Cherat

9. Invited Talks

- **ETH Zurich**, *Computationally Designing Layouts and Decoding Algorithm for Soft Keyboards*. December, 2020
- **Xiamen University**. *Foundations of Computational Interaction in Post-PC Computing: Principles, Algorithms, Models and Applications*, July, 2019
- **Chinese Academy of Sciences**. *Foundations of Computational Interaction in Post-PC Computing: Principles, Algorithms, Models and Applications*, July, 2019
- **University Libraries STEM Speaker Series at Stony Brook University**. *Computational Interaction in Post-PC Computing*, May, 2018
- **University of Cambridge**. *Advanced Topics on Touchscreen Keyboard Design and Optimization*, August, 2018
- **Keynote at Chinese CHI 2016**. *Computational Interaction in Post-PC Computing*, April, 2017

10. Patents

Total: 33 US Patents

- [P33]. **Xiaojun Bi**, Yu Ouyang, Shumin Zhai. Partial gesture text entry. US Patent: 10,140,284. Filed: 4/4/2017. Issued: 11/27/2018
- [P32]. Shumin Zhai, **Xiaojun Bi**, Yu Ouyang. Incremental multi-touch gesture recognition. US Patent: 9,021,380. Filed: 10/5/2012. Issued: 4/28/2015
- [P31]. **Xiaojun Bi**. Keyboard gestures for character string replacement. US Patent: 8,806,384. Filed: 7/2/2014. Issued: 4/14/2015.
- [P30]. **Xiaojun Bi**, Kurt Partridge, Yu Ouyang, Shumin Zhai. Character deletion during keyboard gesture. US Patent: 8,914,751. Filed: 1/14/2013. Issued: 12/16/2014
- [P29]. **Xiaojun Bi**, Shumin Zhai and Michael Andrew Cleron. Dynamically-positioned character string suggestions for gesture typing. US Patent: 8,887,103. Filed: 1/20/2013. Issued: 11/11/2014
- [P28]. **Xiaojun Bi**, Yu Ouyang, Shumin Zhai. Partial gesture text entry. US Patent: 8,850,350. Filed: 10/16/2013. Issued: 9/30/2014
- [P27]. Yu Ouyang, Shumin Zhai, **Xiaojun Bi**. Multi-gesture text input prediction. US Patent: 8,843,845. Filed: 4/8/2013. Issued: 9/23/2014

- [P26]. **Xiaojun Bi**. Keyboard gestures for character string replacement. US Patent: 8,806,384. Filed: 10/24/2013. Issued: 8/12/2014
- [P25]. Tom Ouyang, Shumin Zhai, Ciprian Chelba, **Xiaojun Bi**, Satoshi Kataoka, Ken Wakasa, Keisuke Kuroyanagi. Incremental feature-based gesture-keyboard decoding. US Patent: 8,782,549. Filed: 10/5/2012. Issued: 7/15/2014
- [P24]. Shumin Zhai, Kurt Partridge, **Xiaojun Bi**, Tom Ouyang. Visual feedback deletion. US Patent: 8,584,049. Filed: 3/14/2013. Issued: 11/12/2013
- [P23]. **Xiaojun Bi**, Barton Smith, Shumin Zhai. Method for optimization of soft keyboards for multiple languages. US Patent: 8,542,195. Filed: 3/30/2010. Issued: 9/24/2013
- [P22]. **Xiaojun Bi**, Shumin Zhai. Touchscreen text input. US Patent: 8,405,630. Filed: 04/30/2012. Issued: 3/26/2013.
- [P21]. **Xiaojun Bi**. Suggestion selection during continuous gesture input. US Patent: 9,996,258. Filed: 3/12/2015. Issued: 6/12/2018.
- [P20]. **Xiaojun Bi**. Alternative gesture mapping for a graphical keyboard. US Patent: 9,952,763. Filed: 2/16/2015. Issued: 4/14/2018.
- [P19]. **Xiaojun Bi**, Shumin Zhai. Thumb typing keyboard. US Patent: 9,262,075. Filed: 7/3/2014. Issued: 2/16/2016.
- [P18]. **Xiaojun Bi**. Word prediction for numbers and symbols. US Patent: 9,298,276. Filed: 12/31/2013. Issued: 3/29/2016.
- [P17]. Shumin Zhai, Kurt Edward Partridge, **Xiaojun Bi**, Yu Ouyang. Gesture keyboard with gesture cancellation. US Patent: 9,569,107. Filed: 4/19/2013. Issued: 2/14/2017.
- [P16]. Shumin Zhai, Kurt Edward Partridge, **Xiaojun Bi**, Yu Ouyang. Contextually-specific automatic separators. US Patent: 9,557,818 Filed: 3/4/2013. Issued: 1/31/2017
- [P15]. Tovi Grossman, Justin Frank Matejka, George Fitzmaurice, **Xiaojun Bi**. Multi-Touch Integrated Desktop Environment. US Patent: 9,612,743. Filed: 1/5/2011. Issued: 4/4/2017
- [P14]. Tovi Grossman, Justin Frank Matejka, George Fitzmaurice, **Xiaojun Bi**. Multi-Touch Integrated Desktop Environment. US Patent: 9,600,090. Filed: 1/5/2011. Issued: 3/21/2017
- [P13]. Tovi Grossman, Justin Frank Matejka, George Fitzmaurice, **Xiaojun Bi**. Multi-Touch Integrated Desktop Environment. US Patent: 9,262,005 Filed: 1/5/2011. Issued: 2/16/2016

- [P12]. Tovi Grossman, Justin Frank Matejka, George Fitzmaurice, **Xiaojun Bi**. Multi-Touch Integrated Desktop Environment. US Patent: 8,988,366 Filed: 1/5/2011. Issued: 3/24/2015
- [P11]. **Xiaojun Bi**. Dynamic key mapping of a graphical keyboard. US Patent: 10,146,764. Filed: 4/4/2016. Issued: 12/4/2018.
- [P10]. **Xiaojun Bi**. Apparatus and method for touchscreen keyboard suggestion word generation and display. US Patent: 9,952,764. Filed: 7/6/2015. Issued: 4/24/2018.
- [P9]. Yu Ouyang, Shumin Zhai, **Xiaojun Bi**. Multi-gesture text input prediction. US Patent: 9,710,453. Filed: 9/4/2014. Issued: 7/18/2017
- [P8]. **Xiaojun Bi**, Yu Ouyang, Shumin Zhai. Partial gesture text entry. US Patent: 9,678,943. Filed: 9/24/2014. Issued: 6/13/2017
- [P7]. **Xiaojun Bi**, Kurt Partridge, Yu Ouyang, Shumin Zhai. Character deletion during keyboard gesture. US Patent: 9,665,276. Filed: 11/19/2014. Issued: 5/30/2017
- [P6]. **Xiaojun Bi**. Display screen with animated graphical user interface. US Patent: D780,800. Filed: 11/19/2015. Issued: 3/7/2017.
- [P5]. **Xiaojun Bi**. Display screen with animated graphical user interface. US Patent: D785,037. Filed: 7/3/2014. Issued: 4/25/2017.
- [P4]. Tom Ouyang, Shumin Zhai, Ciprian Chelba, **Xiaojun Bi**, Satoshi Kataoka, Ken Wakasa, Keisuke Kuroyanagi. Incremental feature-based gesture-keyboard decoding. US Patent: 9,552,080 Filed: 7/14/2014. Issued: 1/24/2017
- [P3]. **Xiaojun Bi**, Shumin Zhai and Michael Andrew Cleron. Dynamically-positioned character string suggestions for gesture typing. US Patent: 9,543,439. Filed: 11/10/2014. Issued: 1/17/2017
- [P2]. **Xiaojun Bi**. Portion of a display panel with a computer icon. US Patent: D770,492. Filed: 8/22/2014. Issued: 11/1/2016.
- [P1]. **Xiaojun Bi**. Keyboard gestures for character string replacement. US Patent: 9,009,624. Filed: 7/2/2014. Issued: 4/14/2015.