

Tian Linger Xu

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RESEARCH INTEREST

Cognitive Development, Statistical Learning, Interpersonal Coordination, Time Series Analysis, Multivariate Analysis, Human-Robot Interaction, Assistive Social Robots

EMPLOYMENT

Postdoctoral Researcher 2018-present
Indiana University, Bloomington, IN
Department of Psychological and Brain Sciences

EDUCATION

Dual Ph.D. in Computer Science and Cognitive Science 2018
Indiana University, Bloomington, IN
Luddy School of Informatics, Computing, and Engineering and Cognitive Science Program
Dissertation Committee: Chen Yu, David Crandall, Linda B. Smith, & Selma Šabanović
Dissertation Title: Intelligence with Interaction: Understanding Coordinated Behaviors with Developmental, Computational and Robotic Approaches

M.S. in Computer Science 2012
Indiana University, Bloomington, IN
School of Informatics, Computing, and Engineering

B.E. in Software Engineering 2009
Nanjing University, Nanjing, China
Software Institute

JOURNAL PUBLICATIONS

- **Xu T.L.**, de Barbaro K., Abney D.H. and Cox R.F.A. (2020) Finding Structure in Time: Visualizing and Analyzing Behavioral Time Series. *Frontiers In Psychology*. 11:1457. doi: 10.3389/fpsyg.2020.01457
- Yuan, L., **Xu, T. L.**, Yu, C. & Smith, L. B. (2019) Sustained Visual Attention is More Than Seeing. *Journal of Experimental Child Psychology*, 179, 324-336. PMID: 30579246
- Slone, L. K., Abney, D. H., Borjon, J. I., Chen, C. h., Franchak, J. M., Percy, D., Suarez-Rivera, C., **Xu, T. L.**, Zhang, Y., Smith, L. B., Yu, C. (2018) Gaze in Action: Head-mounted Eye Tracking of Children's Dynamic Visual Attention During Naturalistic Behavior. *JoVE (Journal of Visualized Experiments)*, (141), e58496., doi:10.3791/58496
- **Xu, T.L.**, Zhang, H. & Yu, C. (2016). See You See Me: The Role of Eye Contact in Multimodal Human-Robot Interaction. *ACM Transactions on Interactive Intelligent Systems*, 6(1), 2.
- **Xu, T.**, Zhang, H., & Yu, C. (2013). Cooperative gazing behaviors in human multi-robot interaction. *Interaction Studies*, 14(3), 390-418.
- Yu, C., Yurovsky, D. & **Xu, T.L.** (2012). Visual Data Mining: An Exploratory Approach to Analyzing Temporal Patterns of Eye Movements. *Infancy*, 17(1), 33-60.

CONFERENCE PAPERS

- Zettersten, M., Bergey, C. A., Bhatt, N., Boyce, V., Braginsky, M., Carstensen, A., deMayo, B., Kachergis, G., Lewis, M., Long, B., MacDonald, K., Mankewitz, J., Meylan, S. C., Saleh, A. N., Schneider, R. M., Tsui, A., Uner, S., **Xu, T. L.**, Yurovsky, D., & Frank, M. C. (2021). Peekbank: Exploring children's word recognition through an open, large-scale repository for developmental eye-tracking data. *In Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 43, No. 43).
- **Xu, T.L.**, Abney, D.H. & Yu, C. (2017). Discovering Multicausality in the Development of Coordinated Behavior. *Proceedings of the 39th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society. (Oral presentation acceptance rate 29%)
- Yuan L., **Xu, T.L.**, Yu, C. & Smith, L.B. (2017). Seeing Is Not Enough for Sustained Visual Attention. *Proceedings of the 39th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society. (Oral presentation acceptance rate 29%)
- **Xu, T.** & Yu, C. (2016) Quantifying Joint Activities using Cross-Recurrence Block Representation. Papafragou, A., Grodner, D., Mirman, D., & Trueswell, J.C. (Eds.) *Proceedings of the 38th Annual Meeting of the Cognitive Science Society*, (pp. 1997-2002). Austin, TX: Cognitive Science Society. (Oral presentation acceptance rate 34%)
- Yu, C., **Xu, T.**, Zhong, Y. & Zhang, H. (2014). Learning to interact and interacting to learn: Active statistical learning in human-robot interaction. In *Neural Networks (IJCNN), 2014 International Joint Conference on* (pp. 684-691). IEEE.
- **Xu, T.**, Yu, C. & Smith, L.B. (2011). It's the Child's Body: The Role of Toddler and Parent in Selecting Toddler's Visual Experience. In *Proceedings of IEEE 10th International Conference in Development and Learning and Epigenetic Robotics (ICDL-EpiRob 2011)*.

PUBLICATIONS IN PREPARATION & UNDER REVIEW

- Zettersten, M., Yurovsky, D., **Xu, T. L.**, Uner, S., Tsui, A., Schneider, R. M., ... & Frank, M. C. (2022). Peekbank: An open, large-scale repository for developmental eye-tracking data of children's word recognition. *PsyArXiv*.
- **Xu T.L.**, Abney, D. H., Smith, L. B., & Yu, C. (in prep) From Discoordination to A Single System: Developmental Changes in Parent-Infant Social Interaction
- **Xu T.L.**, Abney, D. H., & Yu, C. (in prep) Topic Modeling in Multivariate Time Series with Cross Recurrence Block Quantification Analysis
- **Xu T.L.**, Abney, D. H., Foster. S., & Yu, C. (in prep) Quantifying Relations among Multiple Behaviors in Time: Application of Granger Causality in Behavioral Psychology

INVITED TALKS AND ORGANIZED WORKSHOPS

- Zettersten, M., Saleh, A., Bhatt, N., Yurovsky, D., **Xu, T. L.**, Uner, S., Tsui, A., Schneider, R. M., Meylan, S. C., Marchman, V., Mankewitz, J., MacDonald, K., Long, B., Lewis, M., Kachergis, G., deMayo, B., Carstensen, A.S.T., Braginsky, M., Boyce, V., Bergey, C., & Frank, M. C. (Nov. 2021). Increases in speed and accuracy of children's online word recognition measured via a large-scale, open database of developmental eye-tracking data. *BUCLD 46*.
- **Xu, T.L.** (March 2019). Discovering Temporal Dependency and Directional Influence among Multimodal Behavioral Variables with Granger Causality. *The 2019 Society for Research in Child Development (SRCD) Biennial Meeting*, Baltimore, MD, USA.

- **Xu, T.L.**, de Barbaro, K. & Cox, R.F.A. (July 2018). Finding Structure in Time. *The 21st International Congress of Infant Studies*. Philadelphia, PA, USA.
- **Xu, T.L.**, Abney, D.H. Smith, L.B. & Yu, C. (July 2018). New Technology Leads to New Discoveries: A Case Study of Using Computational Algorithms to Understand Parent-Infant Interaction. *The 21st International Congress of Infant Studies*. Philadelphia, PA, USA.
- **Xu, T.L.**, Abney, D.H. & Yu, C. (July 2017). Discovering Multicausality in the Development of Coordinated Behavior. *The 39th Annual Meeting of the Cognitive Science Society*. London, England, UK.
- **Xu, T.L.**, (May 2017) Investigating Social Contingencies and Temporal Patterns in Multimodal Coordinated Behaviors. *Cognitive Interaction Technology Workshop*. Bloomington, IN, USA.
- **Xu, T.L.** & Yu, C. (August 2016). Quantifying Joint Activities using Cross Recurrence Block Representation. *The 38th Annual Meeting of the Cognitive Science Society*. Philadelphia, PA, USA.

ACADEMIC HONORS AND AWARDS

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| • Cognitive Science Outstanding Dissertation Award, Cognitive Science Program, Indiana University, Bloomington, IN, U.S. | 2020 |
| • Outstanding Research Award, Cognitive Science Program, Indiana University, Bloomington, IN, U.S. | 2019 |
| • The International Congress of Infant Studies (ICIS) Graduate Student Travel Award, Philadelphia, PA, U.S. | 2018 |
| • The IUB Provost's Travel Award for Women in Science, Bloomington, IN, U.S. | 2017 |
| • The Robert J. Glushko and Pamela Samuelson Foundation Student Travel Award, London, England, U.K. | 2017 |
| • The Robert J. Glushko and Pamela Samuelson Foundation Student Travel Award, Philadelphia, PA, U.S. | 2016 |
| • Best Poster Award, Summer School on Social Human-Robot Interaction, Cambridge, England, U.K. | 2013 |
| • Outstanding Graduates, Nanjing University (Top 5% Students), Nanjing, China | 2009 |
| • 1 st Place, 2008 Programming Competition, Software Institute, Nanjing University, Nanjing, China | 2008 |

TEACHING

Research Mentor, Indiana University

- P397 Supervised Research FALL 2018-PRESENT

Guest Lecturer, Indiana University

- P657 Machine Learning in Cognitive Science SPRING 2017

Associate Instructor, Indiana University

- B649 Cloud Computing SPRING 2015
- B649 Cloud Computing SPRING 2014
- B555 Machine Learning SPRING 2013
- B461 Database Concepts SPRING 2012

- B565 Data Mining SPRING 2011
- A348/B548 Mastering the World Wide Web SPRING 2010
- A201 Introduction to Programming in Python FALL 2010, SUMMER 2010, FALL 2009

MENTORSHIP

Indiana University

- Katherine Long, currently undergrad major in Psychology, Indiana University FALL 2018- FALL 2019
- Alec Fumurescu, currently undergrad major in Psychology, UT Austin FALL 2018