Xuewen Yao

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Education

University of Texas at Austin TX, USA — 08/2018 - 05/2023(Expected)
Ph.D. Electrical and Computer Engineering — GPA: 3.81/4.0
Advisor: Kaya de Barbaro, Edison Thomaz
Dissertation: Leveraging Pervasive Data to Study and Support Mother-Infant Dyads in the Wild

Georgia Institute of Technology GA, USA — 08/2016 - 05/2018
M.S. Computer Science — GPA: 3.7/4.0
Advisor: Kaya de Barbaro, Thomas Ploetz, Jim Rehg

City University of Hong Kong Hong Kong — 09/2012 - 07/2016
B.Eng. (Hons) Information Engineering — GPA: 3.96/4.3
Advisor: Lee Ming Cheng, Ray Chak-Chung Cheung
Thesis: Voice Based Authentication: A Practical and Privacy-Preserving Solution

Experience

Data Scientist Intern, Microsoft — Summer 2022
Supervisor: Ben Freeman (Yammer DEA) — San Francisco, CA

Graduate Research Assistant, University of Texas at Austin — 08/2018 - Present
Supervisor: Kaya de Barbaro, Edison Thomaz — Austin, TX
Working with motion, audio, and text data and building activity recognition, audio event recognition, and chatbots to support mother-infant dyads in the wild

Data Scientist Intern, Microsoft — Summer 2021
Supervisor: Ben Freeman (Yammer DEA) — Virtual
Analyzed user following behaviors in Yammer platform and created a machine learning model to suggest people for users to follow on Yammer

Data Scientist Intern, Apple — Summer 2020
Supervisor: Jessica Zuniga (Ads Platform Engineering) — Virtual
Analyzed and classified advertisers' behaviors on Apple App Store and built machine learning models and conducted human annotations to obtain insights of advertisers' behaviors to improve internal modeling

Software Engineer Intern, Amazon — 05/2017 - 07/2017
Supervisor: Patricia Grao (Search User Experience) — Seattle, WA
Analyzed user's queries and search history on Amazon and used natural language processing to develop an innovative model for recommendation. Expected annual sales in US grow by 101.7 million dollars.

Graduate Research Assistant, Georgia Institute of Technology — 08/2016 - 05/2018
Supervisor: Kaya de Barbaro, Thomas Ploetz, Jim Rehg — Atlanta, GA
Worked on human activity recognition using wearable motion sensors to detect patterns of proximity and physical contact and analyze stress-related behaviors.

Junior Researcher, City University London — Summer 2015
Supervisor: Yogachandran Rahulamathavan, Muttukrishnan Rajarajan — London, UK
Worked on privacy-preserving speaker verification and identification, self-studied and programmed MFCC (Mel-Frequency Cesptral Coefficients) and GMM (Gaussian Mixture Models) to achieve speaker verification in Matlab, and implemented randomization on speaker verification and proved its feasibility.

Publications

(Under Review) **Xuewen Yao**, Miriam Mikhelson, Eunsol Choi, S. Craig Watkins, Edison Thomaz, Kaya de Barbaro. **Understanding Postpartum Parents' Experiences via Two Digital Platforms**. Proceedings of the ACM on Human Computer Interaction (PACM HCI)

(Under Review) Megan Micheletti, **Xuewen Yao**, Mckensey Johnson, Kaya de Barbaro. **Validating a Model to Detect Infant Crying from Naturalistic Audio**. Behavior Research Methods

Xuewen Yao, Megan Micheletti, Mckensey Johnson, Edison Thomaz, Kaya de Barbaro. **Infant Crying Detection in Real-World Environments**. ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (May 2022)

Xuewen Yao, Thomas Plötz, McKensey Johnson, and Kaya de Barbaro. **Automated Detection of Infant Holding Using Wearable Sensing: Implications for Developmental Science And Intervention**.Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) (June 2019)

Yogachandran Rahulamathavan, **Xuewen Yao**, Rahulamathavan Sutharsini, Muttukrishnan Rajarajan and Kanapathippillai Cumanan. **Redesign of Gaussian Mixture Model for Efficient and Privacy-preserving Speaker Recognition**. 2018 International Conference on Cyber Situational Awareness, Data Analytics and Assessment (Cyber SA) (June 2018)

Selected Projects

Implement Lane Following on Duckietown Platform 10/2019 - 12/2019

- Researched deep reinforcement learning techniques for lane following
- Implemented and compared the performance of DDPG, SAC, and PPO

Towards Understanding Regularization in Normalization Layers in Deep Neural Networks 01/2019 - 05/2019

- Compared the regularization effect of batch normalization, layer normalization, instance normalization, group normalization and dropout using Convolutional Neural Nets on CIFAR-10 dataset

Analysis of Diurnal and Seasonal Mood using Twitter Data 11/2017 - 12/2017

- Collected over 60GB of twitter data of year 2016
- Used VADER Sentiment Analysis to extract positive and negative affects from tweets
- Analyzed hourly diurnal mood change by day of the week
- Analyzed the relationship between mood change and number of friends/followers and device impact
- Calculated the top PMI words for morning/night (goo.gl/kkAZK7)

Planet: Understanding the Amazon from Space (Kaggle) 10/2017 - 12/2017

- Modified pre-trained ResNet, DenseNet and VGG to work with satellite image chips downloaded from Kaggle
- Labeled images with atmospheric conditions and various classes of land cover/land use with 90% accuracy using Amazon AWS and PyTorch

Artistic Imagery 01/2017 - 05/2017

- Replicated the work of *A Neural Algorithm of Artistic Style*
- Used ConvNets to separate and recombine content and style of arbitrary images to produce artistic images (TensorFlow)

Related Courses

Machine Learning, Artificial Intelligence, Computer Vision, Deep Learning, Natural Language Processing, Reinforcement Learning, Statistical Techniques in Robotics, Convex Optimization, Data Structures and Algorithms, Operating Systems, Database Systems, Digital Signal Processing

Skills

Python (Tensorflow, PyTorch), Matlab, C/C++, Java, SQL, R

Teaching

CS388 Natural Language Processing — Fall 2021
Teaching Assistant with Prof. Greg Durrett

CS6601 Artificial Intelligence — Spring & Fall 2017, Spring 2018
Teaching Assistant with Prof. Thad Starner

Posters

Saleh, A.N., Khante, P., **Yao, X.**, & de Barbaro, K. (April 2022) Háblame Mamá: Acoustic Detection of Vocal Affect in Spanish Speaking Mothers'. Cognitive Development Society 12th Biennial Meeting, Madison, WI.

Madden-Rusnak, A., **Yao, X.**, & de Barbaro, K. (April 2021). Evaluating Objective Assessment of Daily Holding as a Predictor of Parasympathetic Tone in Mother-Infant Dyads. Society for Research in Child Development Virtual Biennial Meeting.

Mikhelson, M., Micheletti, M., **Yao, X.**, & de Barbaro, K. (April 2021). Maternal Mood and Contingency to Infant Distress in Everyday Settings. Society for Research in Child Development Virtual Biennial Meeting.

Micheletti, **Yao, X.**, Nariman, N., Benson, B., Johnson, M. L., & de Barbaro, K. (July 2020). A Comparison of Automated Methods for Quantifying Daily Infant Crying from Naturalistic Audio Recordings. International Conference on Infant Studies. Glasgow, Scotland.

Micheletti, M., **Yao, X.**, Wang, Y. Zhang, Y. Johnson, M. L., & de Barbaro, K. (July 2020). Objective Markers of Mother and Infant Behavior Predict Intraindividual Changes in Maternal Mood and Anxiety. International Conference on Infant Studies. Glasgow, Scotland.

Johnson, M. L., Andres, L., Micheletti, M., **Yao, X.**, & de Barbaro, K. (July 2020). Who Talks to Babies? Multimodal Ambulatory Assessments Predict Hour-by-Hour Fluctuations in Caregiver Speech Over a Week. International Conference on Infant Studies. Glasgow, Scotland.

Yao, X., Ploetz, T., Johnson, M.L., & de Barbaro, K. (March 2019). Automated Detection of Infant-Holding and -Carrying Behaviors via Body-Worn Motion Sensors. Society for Research in Child Development. Baltimore, MD.

Talks

Saleh, A.N., Khante, P., **Yao, X.** & de Barbaro, K. Acoustic Features of Maternal Day-to-Day Speech: Classification of Depression in Speech Pattern. Talk to be presented at the 2022 Biennial International Congress on Infant Studies in Ottawa, Canada. 7 – 10th July 2022.

Micheletti, M., **Yao, X.**, Johnson, M., Goodman, S., & de Barbaro, K. (June 2019) Is infant crying in the ear of the beholder? Examining the relationship between mothers' perceptions of daily infant crying and maternal postpartum depression. Presented at the Biannual Meeting of the Society for Ambulatory Assessment, Syracuse, New York.

Service

Paper reviewer: IMWUT (2022)
Student volunteer: UbiComp/ISWC (2020), PerCom (2020)

Mentoring

Yicheng Zhang (MS Information)	Spring 2019
Yizhan Wang (MS Information)	Spring 2019
Li Nie (MS Information)	Summer 2019
Isabella Barnes (UG Behavioral Neuroscience)	Fall 2020 - Spring 2021
Nehaa Dambala (UG Chemistry & Health and Society)	Fall 2020 - Spring 2021
Rehman Zindani (UG Psychology)	Spring 2021
Magisha Radjendran (UG Psychology)	Spring 2021
Ashna Dhaduti (UG Public Health)	Spring 2021