

Hui Sophie Wang, PhD

✉ huiwang8921@gmail.com | 🏠 huisophiewang.github.io | 🌐 huisophiewang

Summary

PhD in Computer Science with a specialization in computational modeling of human physiology and behavior. Deeply passionate about investigating the mechanisms of human cognition and behavior. Eager to engage in cutting-edge interdisciplinary research in neuroscience.

Education

Northeastern University

PHD IN COMPUTER SCIENCE

- Advisors: Misha Pavel and Stacy Marsella

Boston, MA

Sep 2014 - Aug 2023

Carnegie Mellon University

MASTER OF ENTERTAINMENT TECHNOLOGY

Pittsburgh, PA

Sep 2009 - Dec 2011

Zhejiang University

BS IN ELECTRICAL ENGINEERING

- Research Advisor: Ligang Liu

Hangzhou, China

Sep 2005 - Jun 2009

Research Experiences

Northeastern University - Health Behavior Informatics Lab

SUPERVISOR: MISHA PAVEL

Boston, MA

Jan 2018 - Aug 2023

- Proposed a novel state space model of electrodermal activity that incorporates both the tonic level and phasic response. Evaluated the model in terms of model assumptions, the properties of the estimated sudomotor nerve activities, and tonic phasic decompositions.
- Developed a novel method for cleaning low-quality cardiac inter-beat interval signals obtained from photoplethysmography sensor based on singular spectrum analysis.

Northeastern University - Cognitive Embodied Social Agents Research Lab

SUPERVISOR: STACY MARSELLA

Boston, MA

Sep 2014 - Jan 2018

- Developed a Bayesian Network model for evacuation decision making during hurricanes through an iterative procedure combining conditional independence tests and domain knowledge.
- Developed data-driven behavioral metrics for the assessment of big five personality traits from smartphone sensing data using sequential data mining techniques and domain knowledge in personality psychology.

University of Southern California - Information Sciences Institute

SUPERVISOR: EMILIO FERRARA

Los Angeles, CA

May 2020 - Aug 2020

- Built and evaluated machine learning models for predicting work stress of health professionals using a multimodal dataset containing electrocardiogram, respiration, and accelerometer data.
- Implemented data preprocessing and feature extraction pipeline of all the modalities.
- Developed general model, group-level model and individual-level model.

University of Southern California - Institute for Creative Technology

SUPERVISOR: STACY MARSELLA

Los Angeles, CA

May 2011 - Aug 2011

- Integrated a multi-agent decision making system and a character animation system to simulate virtual humans and their interactions.

Walt Disney Imagineering Research & Development

SUPERVISOR: STEPHANIE HUERRE

Los Angeles, CA

May 2010 - Aug 2010

- Developed customized tools to analyze real-time crowd flow in user-defined zones for an agent-based system to simulate realistic crowd behaviors in theme parks.

Publications

PREPRINTS

Wang, H. S., Marsella, S., & Pavel, M. (2023). A Unified Dynamic Model for the Decomposition of Skin Conductance and the Inference of Sudomotor Nerve Activities. arXiv preprint arXiv:2311.02799.

Wang, H. S., Yongsatianchot, N., & Marsella, S. (2023). A Graphical Model of Hurricane Evacuation Behaviors. arXiv preprint arXiv:2311.10228.

PUBLISHED

Wang, H., Jimison, H., & Pavel, M. (2021, November). Reducing Motion Artifacts of Pulse Intervals from Photoplethysmogram of a Commercial Wristband for Heart Rate Variability Analysis. In 2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC) (pp. 47-51). IEEE.

Wang, H., and Marsella, S. (2017, October). Assessing personality through objective behavioral sensing. In 2017 Seventh International Conference on Affective Computing and Intelligent Interaction (ACII) (pp. 131-137). IEEE.

Poster Presentations

"Analyzing the Role of Risk Perception, Social Factors and Media in Evacuation Decisions", Conference of the International Society for Research on Emotion (ISRE 2022) Pre-Conference: Affective Computing

Academic Services

Peer Review, 11th Intl. Conf. on Affective Computing & Intelligent Interaction (**ACII 2023**)

Peer Review, 42nd Intl. Conf. of IEEE Engineering in Medicine and Biology Conference (**EMBC 2020**)

Peer Review, 8th Intl. Conf. on Affective Computing & Intelligent Interaction (**ACII 2019**)

Student Volunteer, 39th ACM Conf. on Computer Graphics and Interactive Techniques (**SIGGRAPH 2012**)

Teaching Experiences

Northeastern University

Teaching Assistant

CS 6140 MACHINE LEARNING

Summer 2023

CS 5335 ROBOTICS SCIENCES AND SYSTEMS

Spring 2023

CS 5100 FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Fall 2022

CS 7290 BAYESIAN MACHINE LEARNING

Summer 2022

CS 7290 CAUSAL MODELING IN MACHINE LEARNING

Fall 2020

CS 6220 DATA MINING TECHNIQUES

Fall 2019

Technical Skills

Techniques: Machine Learning, Deep Learning, Signal Processing, Image Processing, State Space Model, Time Series Model, Probabilistic Graphical Model, Bayesian Inference, Causal Inference

Programming Languages: Python, MATLAB, R, C++

Frameworks: PyTorch, TensorFlow, Keras, Scikit-learn