Hui Sophie Wang, PhD

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Education

Northeastern University *Boston, MA*
PhD in Computer Science *Sep 2014 - Aug 2023*
- Advisors: Misha Pavel and Stacy Marsella

Carnegie Mellon University *Pittsburgh, PA*
Master of Entertainment Technology *Sep 2009 - Dec 2011*

Zhejiang University *Hangzhou, China*
BS in Electrical Engineering *Sep 2005 - Jun 2009*
- Research Advisor: Ligang Liu

Research Experiences

Northeastern University - Health Behavior Informatics Lab *Boston, MA*
Supervisor: Misha Pavel *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 *Boston, MA*
Supervisor: Stacy Marsella *Sep 2014 - Jan 2018*
- Developed a Bayesian Network model for evacuation decision making during hurricanes through an iterative procedure combing 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 *Los Angeles, CA*
Supervisor: Emilio Ferrara *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 mode.

University of Southern California - Institute for Creative Technology *Los Angeles, CA*
Supervisor: Stacy Marsella *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 *Los Angeles, CA*
Supervisor: Stephanie Huerre *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

H. Wang, S. Marsella, and M. Pavel, "A Unified Dynamic Model for the Decomposition of Skin Conductance and the Inference of Sudomotor Nerve Activities"

H. Wang, N. Yongsatianchot, S. Marsella, ”A Graphical Model of Hurricane Evacuation Behaviors”

Published

H. Wang, H. Jimison, and M. Pavel, “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, 2021.

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

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 Iteractive 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