Biographical Sketch

Wenbing Zhao, Ph.D.

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Dr. Wenbing Zhao is a full Professor of Electrical Engineering and Computer Science (EECS) at Cleveland State University (CSU), Cleveland, Ohio, USA. He obtained his B.S. and M.S. degrees in Physics from Peking University, Beijing, China, in 1990 and 1993, respectively, and his M.S. and Ph.D. degrees in Electrical and Computer Engineering from University of California, Santa Barbara, in 1998 and 2002, respectively. Prior to joining Cleveland State University in 2004, Dr. Zhao worked as a post-doctoral researcher at University of California, Santa Barbara, and as a senior research engineer/chief architect at Eternal Systems, Inc. (now dissolved), which he co-founded in 2000.

Dr. Zhao has done research in several different areas, including fault tolerance computing, computer and network security, smart and connected healthcare, machine learning, Internet of Things, quantum optics and superconducting physics. Currently, his research focuses on smart and connected healthcare. Dr. Zhao's recent research has been funded by the National Science Foundation, Ohio Bureau of Workers' Compensation, Ohio Department of Higher Education, Ohio Advancement Office (via the Ohio Third Frontier Program), US Department of Transportation (via CSU Transportation Center), Cleveland State University, and private companies.

In the field of smart and connected health, Dr. Zhao has focused on developing computer-vision based technology for human motion tracking and the integration of wearable sensing for daily life tracking and delivering realtime interventions. One of his highly successful projects is the development of a privacy-aware compliance tracking system (PACTS). The project was initially sponsored by the Ohio Bureau of Workers' Compensation while PACTS was designed to enhance compliance to best practices for nursing assistants in skilled nursing facilities. Lost productivity from lower back injuries in workplaces costs billions of US dollars per year. A significant fraction of such workplace injuries is the result of workers not following best practices. Previous studies have shown that a multifaceted approach would have to be used to improve the situation. Hence, this project integrates body mechanics training and a technology-based real-time intervention solution to reduce workplace injuries. In this project, Dr. Zhao pioneered a novel approach of integrating computer vision and wearable sensing to facilitate privacy-aware tracking of activities of consented users. This technology makes it possible to use the computer vision technology in venues where privacy of non-consented people (such as patients at the hospital and skilled nursing facilities) is essential. This patent pending technology has been deployed at a skilled nursing facility in Cleveland, Ohio, USA. In April 2018, Dr. Zhao was interviewed by a team of journalists of the Plain Dealer, the largest newspaper in Cleveland, Ohio, and reported the PACTS technology as a potential solution to reduce nursing home

injuries in both the printed version of the newspaper and on the newspaper website: https://www.cleveland.com/metro/index.ssf/2018/04/solutions_to_nursing_home_work.html.

Dr. Zhao is in the process of the commercializing the PACTS technology with the help of two grants, the I-Corps@Ohio grant, and the Cleveland State University/Kent State University TeCK Fund.

Dr. Zhao's research on smart and connected health was included as one of the "exceptional success stories" at Cleveland State University in the @CSUresearch magazine (https://issuu.com/csuperspective/docs/research-magazine_digital, page 21).

Dr. Zhao's result has resulted in a research monograph, titled "*Building Dependable Distributed Systems*," two edited books, 30 book chapters, and over 150 peer-reviewed journal and conference publications. He also has a US patent on consistent time service for fault tolerant distributed systems, has another US patent pending related to the PACTS technology. His research work on the end-to-end latency characterization of a fault tolerant CORBA infrastructure won him the best paper award in computer systems at the 2002 International Symposium on Performance Evaluation of Computer and Telecommunication Systems. In 2007, Dr. Zhao's paper won the Most Promising Research Award at the Middleware for Web Services Workshop. Recently, his paper on concurrent Byzantine fault tolerance for software-transactional-memory based applications won the Best Paper award in the 2012 International Conference on Distributed Computing Engineering.

Since joining Cleveland State University in 2004, Dr. Zhao has developed 8 courses and taught 1-2 courses per semester. He has great passion for teaching and interacting with students both in and outside classrooms. He is a recipient of the 2017 CSU Distinguished Faculty Teaching Award, and the 2007 College of Engineering Distinguished Faculty Teaching Award. Dr. Zhao also received several teaching innovation grants from Cleveland State University (in 2007, 2008, 2009, 2011, 2013, 2015). Since fall 2015, Dr. Zhao has been serving as the Director of the Master of Science in Electrical Engineering, and the Chair of the Graduate Program Committee in the EECS Department.

Dr. Zhao has been very active in providing professional services. Other than the Departmental/College/University duties, he has served on the US National Science Foundation panels, as a conference organizer, as a tutorial instructor, and as a member of the technical program committee of numerous conferences/workshops, including the IEEE Smart World Congress, IEEE Smart IoT Conference, IEEE International Conference on Web Services, IEEE International Conference on Dependable, Autonomic and Secure Computing, IEEE International Conference on Mobile Services, the IEEE International Conference on Embedded Software and Systems. Dr. Zhao is currently serving as an Associate Editor for IEEE Access and MDPI Computers, as an Academic Editor for PeerJ Computer Science, and on the editorial board of International Journal of Parallel Emergent and Distributed Systems, Applied System Innovation (MDPI), International Journal of Performability

Engineering (Rams Consultants), International Journal of Distributed Systems and Technologies (IGI Global). Furthermore, Dr. Zhao is a frequent reviewer for numerous top journals, such as IEEE Transactions on Computer, IEEE Security and Privacy, IEEE Transactions on Dependable and Secure Computing, IEEE Transactions on Data and Knowledge Engineering, IEEE Transactions on Services Computing, and ACM Transactions on the Web. Dr. Zhao is a senior member of Institute of Electrical and Electronics Engineers (IEEE), a vice chair of the IEEE Smart World Technical Committee Task Force on User-Centred Smart Systems (under IEEE Computational Intelligence Society), a member of the IEEE SMC TC on Cybermatics.