

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, 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 a number of different areas, including fault tolerance computing, computer and network security, smart and connected healthcare, quantum optics and superconducting physics. Currently, his research focuses on dependable distributed computing, and smart and connected healthcare. He is also exploring an exciting emerging research area on medical cyber physical systems, where he could integrate dependable computing with smart and connected healthcare. Dr. Zhao's recent research has been funded by the National Science Foundation, Ohio Bureau of Workers' Compensation, US Department of Transportation (via CSU Transportation Center), Cleveland State University, and private companies.

In the area of dependable systems, Dr. Zhao comprehensively studied how to build dependable systems that can tolerate both crash and malicious faults while minimizing the runtime overhead (in terms of both end-to-end latency and system throughput). He took a unique approach of systematically utilize the application semantics to enable concurrent processing of unrelated requests for several different types of applications, ranging from Web services, to event stream processing, to collaborative editing.

In the area of smart and connected health, Dr. Zhao has focused on developing computer-vision based technology for human motion tracking and the integration of wearable computing for daily life tracking and delivering realtime interventions. Recently, Dr. Zhao received a research grant from the Ohio Bureau of Workers' Compensation on the compliance, monitoring, and continuously quality improvement of 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 are 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 is currently being deployed at a skilled nursing facility in Cleveland, Ohio, USA. 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/csaperspective/docs/research-magazine_digital, page 21).

Dr. Zhao's result has resulted in a research monograph, titled "*Building Dependable Distributed Systems*," 30 book chapters, and over 110 peer-reviewed journal and conference publications. He also has a US patent on consistent time service for fault tolerant distributed systems, has recently filed another US patent related to smart & connected health. 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 7 courses and taught 1-2 courses per semester. He has great passion for teaching and interacting with students both in and outside classrooms. His teaching effort was recognized by the CSU College of Engineering and he received the College Distinguished Faculty Teaching Award in May 2007. Dr. Zhao also received a number of 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 4 NSF panels, has served 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 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, and several IARIA conferences., Dr. Zhao is currently serving as an Associate Editor for IEEE Access, as an Academic Editor for PeerJ Computer Science, and on the editorial board of International Journal of Parallel Emergent and Distributed Systems, International Journal of Performability Engineering (Rams Consultants), International Journal of Distributed Systems and Technologies (IGI Global), and several IARIA journals. 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), and is a member of the Task Force on Smart World of the IEEE Computational Intelligence Society Emergent Technologies Technical Committee.