



## **2023 Election for Board Director**

### **Candidate**

Jiajie Zhang

### **Professional Title And Affiliation**

Dean, Professor, and The Glassell Family Foundation Distinguished Chair in Informatics, D. Bradley McWilliams School of Biomedical Informatics at UTHealth® Houston Excellence

### **Personal Statement**

During this phase of my career, I am eager to contribute to the informatics community at a higher level, and service through the AMIA Board represents a brilliant opportunity for me to accomplish this seminal life goal. Empowered by a sense of hope and optimism that has been leavened by humility and experience, I would like to continue to learn and grow by interacting with my colleagues at AMIA and contribute my expertise, leadership skills, extensive networks, and resources to help advance initiatives undertaken by AMIA and its board.

Never has it been more important for clinicians, informaticians, healthcare institutions, professional informatics organizations, governmental agencies, and private industry to work together. Helping to effect and strengthen these synergistic relationships, thereby adding value to the AMIA enterprise, would constitute a source of great personal meaning and satisfaction because our nation's quality of life, and even our survival, may well depend on the work of entities like the American Medical Informatics Association.

Having been a member of AMIA since 1998, I would consider it a tremendous honor to serve as an AMIA Board member.

### **Bio**

Dr. Jiajie Zhang is dean, professor, and The Glassell Family Foundation Distinguished Chair in Informatics Excellence at D. Bradley McWilliams School of Biomedical Informatics at UTHealth® Houston. In addition, he is a professor at the MD Anderson Cancer Center-UTHealth Graduate School of Biomedical Sciences. Zhang is a Fellow of the American College of Medical Informatics (FACMI; 2003), the American Medical Informatics Association (FAMIA; 2019), and the International Academy of Health Sciences Informatics (FIAHSI; 2020). Also, he is a member of the National Advisory Council of the Agency for Healthcare Research and Quality (AHRQ; 2022) and is chair-elect of the AMIA Academic Forum Biomedical and Health Informatics Academic Leaders Community, American Medical Informatics Association (AMIA; 2023). Zhang has a BS in Biology from the University of Science and Technology of China and a PhD in Cognitive Science (the world's first) from the University of California San Diego.

Zhang has more than 30 years of research, education, application, and management experience in biomedical informatics, cognitive science, human technology integration, information visualization, usability and workflow, decision making, and machine learning. He has conducted pioneering research on distributed knowledge representations and their effects on decision making, problem solving, and human-computer interaction, and was early to recognize the importance of usability, design, and cognitive support in health information technology. In continuing that work at UTHealth® Houston, Zhang led the \$15M SHARPC Project arm of the Strategic Health IT Advanced Research Projects (SHARP) Program, a seminal consortium funded by the Office of the National Coordinator for Health Information Technology (ONC) to support innovative research that would address well-documented problems impeding the adoption and use of health IT. Zhang's SHARPC Project focused on enhancing patient-centered cognitive support in EHR and health information technology, and resulted in the creation of the National Center for Cognitive Informatics and Decision Making in Healthcare (NCCD) at UTHealth® Houston.

Since his appointment as dean of McWilliams School of Biomedical Informatics in March of 2013, Zhang has been responsible for the rapid growth of the school—tripling faculty and student numbers, as well as research expenditures—through targeted faculty and student recruitment efforts; reshaping academic foci, programs, and curricula; developing tactical partnerships; and building the school's research capacity and scope. In addition, he helped obtain support for the school's 40,000 SF facilities expansion and led a major effort to bolster philanthropic funding; most recently, he secured a \$22 million transformational gift that named the school. McWilliams School of Biomedical Informatics features: 130+ faculty (68 regular and 65 adjunct) and 480+ graduate students focused on one or more of the following three concentrations (now, formal departments of the school): Data Science and AI, Clinical and Health Informatics, and Bioinformatics and Systems Medicine—as well as 139 research staff and 48 administrative personnel; 9 Research Centers: Center for Precision Health (CPH), Center for Translational AI in Medicine (TRAIM), Center for Computational Systems Medicine (CCSM), Center for Artificial Intelligence and Genome Informatics (AIGI), Center for Biomedical Semantics and Data Intelligence (BSDI), Center for Health Systems Analytics (CHSA), Center for Secure Artificial Intelligence For Healthcare (SAFE), Center for Quality Health IT Improvement (CQHII), and Center for Digital Health and Analytics (CDHA); and 5 Application Cores: Biomedical Informatics Group Analytics Research Center (BIG-Arc), Data Science and Informatics Core for Cancer Research (DSICCR), Cancer Genomics Core (CGC), McWilliams Data Service (MDS), and the UT Health Intelligence Platform (UT-HIP), a joint venture with UT System that links clinical and administrative data from all 5 UT System health institutions. Independent of the faculty, students, and research and administrative staff ; centers; cores; laboratory facilities; and equipment available for research, McWilliams School of Biomedical Informatics features world-class computational resources—a \$6M+ investment, inclusive of advanced hardware infrastructure for AI and big data—that can be leveraged for research projects of any scope and size. Under Zhang's leadership, McWilliams School of Biomedical Informatics at UTHealth® Houston has become a national/international leader in Data Science and AI, Clinical and Health Informatics, and Bioinformatics and Systems Medicine.

## **Leadership Skills**

An interdisciplinary academic whose knowledge and experience span the natural sciences (physics; biochemistry and molecular biology; neuroscience), social sciences (psychology; cognitive science), AI and machine learning, medicine, and public health, I am also a thought leader who conceives vision and develops strategies from historical and societal perspectives, while maintaining a pragmatic focus on identifying viable solutions to real-world problems.

I suppose my ongoing journey to become a leader began at the age of 16, when I was selected to attend the University of Science & Technology of China Special Program for the Gifted Young (Physics & Biology); another milestone occurred when, at 23, I matriculated to the University of California, San Diego (UCSD) PhD Program within the Department of Psychology & Institute for Cognitive Science; and a third formative period was initiated when I transferred from the Psychology Department to the newly created UCSD Department of Cognitive Science at the age of 26. Under the mentorship of Dr. Donald A. Norman, and with guidance from other faculty, I completed my PhD in Cognitive Science—the world’s first—when I was 29. Upon graduating, I went on to serve as a faculty member at The Ohio State University, where I was an assistant professor for six years; subsequently, I was recruited to UTHealth® Houston in 1998—when, coincidentally, I first joined AMIA—and worked my way through the ranks of what is now McWilliams School of Biomedical Informatics, becoming a full professor in 2005. For roughly a year, I served as interim dean and, after an extensive national search undertaken by UTHealth® Houston, I was formally appointed dean of McWilliams School in 2013.

Regarding strategic and analytical thinking, I believe the upward trajectory of my career is sufficient evidence for those leadership essentials, though I am more than willing to provide my CV with introductory remarks, should that prove helpful. I would add that monitoring and oversight functions related to faculty, students, and other university efforts constitute a large part of my administrative role as dean. I am focused on the goals/outcomes we establish, as well as tactics, measures, progress toward their achievement, and proposing course corrections when things are not proceeding according to plan. Generally, I am no longer involved in supervisory activity, unless it concerns an associate dean (e.g., for an annual review) who reports directly to me, or a mentee (e.g., project). For the purposes of board participation, oversight is the appropriate activity, with a focus on policy, resources, and/or strategy development.

In support of this self-nomination to AMIA’s board, I would like to share the following representative achievements:

### **Leadership in Education**

Since my appointment as dean of McWilliams School of Biomedical Informatics UTHealth® Houston in March of 2013, I have been responsible for the rapid growth of the school—tripling faculty and student numbers, as well as research expenditures—through targeted faculty and student recruitment efforts; reshaping academic foci, programs, and curricula; developing tactical partnerships; and building the school’s research capacity and scope. In addition, I helped obtain support for the school’s 40,000 SF facilities expansion and led a major effort to

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During my tenure as dean, McWilliams School of Biomedical Informatics at UTHealth® Houston has become a national/international leader in Data Science and AI, Clinical and Health Informatics, and Bioinformatics and Systems Medicine.

#### Leadership in Research

Since becoming dean of McWilliams School of Biomedical Informatics UTHealth® Houston in 2013, I have necessarily curtailed my front-line research activities, dedicating most of my effort to supporting faculty and students and growing the education, research, and application activities of the school. I have authored over 200 refereed publications; my Google Scholar statistics reflect approximately 16,000 citations, with an h-index of 54 (as of June 27, 2023). In addition, I have been the PI, Co-PI, or Co-I on numerous grants and contracts (Total cumulative: \$202M, including \$39M as PI, \$111M as PI & Co-PI, and \$52M as Co-I and other roles). It should also be noted that, from 2002-2013, I served as associate dean for research at McWilliams School.

## Research Highlights

1. One of my major contributions to the field of informatics is my pioneering work on distributed knowledge representations and their effects on decision making, problem solving, and human-computer interaction. The idea behind distributed knowledge representation is that the information needed for most complex information processing tasks (e.g., making a diagnosis or reviewing a patient chart) is distributed across the external technology (e.g., electronic health records) and the internal mind (e.g., expert knowledge of a medical domain). The result of this research is the theory of distributed representations for distributed cognition, which has been applied to the design of efficient information systems in many domains, including Electronic Health Records (EHRs), medical devices, aviation systems, consumer products, education technology, etc. This theory is also the basis for the TURF framework of EHR usability.

2. Early to recognize the importance of usability, design, and cognitive support in health information technology, I led the groundbreaking ONC SHARPC Project, one arm of a collaborative grant involving 8 institutions and a total of 120 researchers across the US; SHARPC was funded with \$15 million from the Office of the National Coordinator for Health IT (ONC) to support research and development in cognitive support for health IT. The continuing ramifications of the ONC project are well known. As part of this effort, I created the National Center for Cognitive Informatics and Decision Making in Healthcare, for which I served as director. One of the major byproducts of SHARPC is the previously noted unified framework, TURF, which is a theory for defining, describing, explaining, and predicting usability; a method for evaluating, measuring, and designing usability; and a software tool suite for automating usability evaluation and conducting user testing.

## Leadership in Service

My career has been centered on using data to improve healthcare quality and safety, advance biomedical discovery, create rigorous informatics education programs, and advocate for the power of informatics in healthcare—which aligns with AMIA’s mission and vision. My independent and collaborative contributions to the field of biomedical informatics are a testament to my seminal work and executive leadership—as is the inspiring vision statement I developed to represent the school for which I serve as dean: McWilliams School of Biomedical Informatics at UHealth® Houston is Transforming Data to Power Human Health™.

Moreover, in recognition of the expertise and leadership of John P. Glaser, PhD, who is a universally recognized thought leader in the field of health informatics, in 2015 I initiated The John P. Glaser Health Informatics Society (Glaser Society) at McWilliams School of Biomedical Informatics. The Glaser Society was created to acknowledge innovators in the field of health informatics and provide education, collaboration, and networking opportunities for the broader community of health informatics professionals, clinicians, and students.

Independent of the aforementioned, I am a member of the National Advisory Council of the Agency for Healthcare Research and Quality (AHRQ; 2022) and chair-elect of the AMIA

Academic Forum Biomedical and Health Informatics Academic Leaders Community, American Medical Informatics Association (AMIA; 2023).

As evidenced by my background as a leader in academia, research, and within the broader informatics community, I am highly skilled at bringing diverse groups of people together to work on problems, while successfully harnessing the talents of the individual member. My accomplishments were recognized nearly two decades ago, when I was elected a Fellow of the American College of Medical Informatics (FACMI), and my contributions since that time have greatly surpassed those for which I was honored with FAMIA and FIAHSI designations. I am known, nationally and globally—in part through my consistent presence and participation at AMIA, MedInfo, and other professional society meetings—and my expertise is sought for panels, committees, councils, speaking engagements, and editorial and advisory boards. In addition, I have created collaborative informatics education programs with academic institutions in Asia and South America. Over the course of my academic career, I have proudly trained many PhD and MS students, and postdoctoral fellows—all of whom have gone on to develop illustrious careers. In addition, I have mentored many others, including individuals who have become AMIA fellows. Finally, I encourage all of my faculty, students, and mentees to participate in AMIA activities.

#### **Reputation for Excellence (in informatics)**

My career features more than 30 years of research, education, application, and management experience in biomedical informatics, cognitive science, human technology integration, information visualization, usability and workflow, decision making, and machine learning. I have conducted pioneering research on distributed knowledge representations and their effects on decision making, problem solving, and human-computer interaction. Known for my expertise, servant leadership style, integrity, reliability, and collaborative spirit, I am a respected national and global leader in biomedical informatics who is a proponent of: scientific excellence and achievement, through my own research and that of others with whom I cooperate; equity and inclusion, through my activities as a dean and influencer, advocating for opportunities for talented individuals of every race and creed, at every level; fostering long-term relationships built on integrity and trust, through my extensive personal and professional networks; and evidence-based public policy, through my research and service as a respected advisor and expert.

Though time is a precious commodity, I selectively and enthusiastically contribute where I can make the greatest impact. In this instance, I am referring to board membership for AMIA, with which I share foundational values and a deep commitment to developing and applying biomedical and health informatics in support of patient care, education, research, and health care administration.

I have found that respect, humility, and guiding negotiations to achieve win-win solutions is the best way to achieve optimal results. Indeed, I know the value of cultivating and maintaining long-term relationships—whether with students, faculty, staff, board members, donors, or external colleagues—and this is a central feature of my service as a leader.

As an AMIA Board member, I would lead by example; serve as an informatics ambassador and organizational advocate; foster relationships, old and new; build bridges between pivotal entities, programs, and individuals; and enhance the capacity of the organization—with the overall goal of benefiting AMIA and its members, as well as the broader informatics and clinical care communities and education institutions we serve.

### **Perspective Add**

In reviewing AMIA's current board, I find that—if chosen to serve—I would be your sole member who is the dean of a school of biomedical informatics; more specifically, I lead the largest and only free-standing school among 70 such programs in the nation and the world. The mission of McWilliams School of Biomedical Informatics at UTHealth® Houston is to collect, process, and convert data—ranging from molecules to populations—into actionable information, knowledge, and intelligence; to educate current and future leaders, innovators, and problem-solvers across Texas, the nation, and the world; and to disrupt, transform, and innovate to elicit biomedical discoveries, improve healthcare delivery, and aid in disease prevention by conducting outstanding basic and applied research and developing impactful information technology products and solutions. Thus, I would bring to the AMIA Board a comprehensive knowledge of the immense value of our transdisciplinary field. Concerning specific areas of expertise, I can contribute to the AMIA Board by bringing leadership and perspective on: 1) Health IT and Electronic Health Record (EHR) usability and safety, 2) cognition in human-technology interaction in healthcare, and 3) the education of future leaders in Data Science and AI, Clinical and Health Informatics, and Bioinformatics and Systems Medicine. In addition, like others now on the board, I have a wonderful network of colleagues and collaborators that I can call upon, as needed.

Regarding my track record for supporting diversity and inclusion, at my school, university, and the entities with which I am/have been affiliated, I am unequivocal in my approach to supporting the principles of diversity and inclusion—in policy and in deed. In my research, administrative, and other roles, one area of major focus is engaging and supporting underrepresented populations. This is particularly critical to the success of students and faculty, as well as individuals/groups in any context.

### **Team Player**

With more than 30 years of collaborative leadership experience, I have found that there is very little that cannot be accomplished, provided one has the proper attitude. I respect the rights, opinions, expertise, and contributions of others—and facilitating goodwill and helping to identify and engineer a group's desired goals/optimal results through cooperation and collaboration are some of my best strengths and the sources of my greatest satisfaction. As a team player, I adapt well to change (e.g., circumstances, objectives, dominant trends, group dynamics, and performance expectations, etc.). The nature of my role as a dean is to lead organizations/groups/individuals through collaborative decision-making, which I undertake with sensitivity, care, and loyalty, ultimately acquiescing to the final decision of those involved, even when it is counter to my opinion.

## **AMIA Engagement and Participation**

AMIA member: 20+ years

I have actively participated in the American Medical Informatics Association (AMIA) since 1998—through participation in AMIA programs, panels, courses, committees, working groups, and conferences—and have served as an author, reviewer, and guest editor for JAMIA. I was elected an AMIA Fellow in 2019; similarly, I am a Fellow of the American College of Medical Informatics and a Fellow of the International Academy of Health Sciences Informatics. As dean, I strongly recommend and support the participation of McWilliams School of Biomedical Informatics faculty and students in AMIA events, conferences, and working groups, etc.

Below is a representative list of my AMIA activities.

### AMIA Activities

AMIA Academic Forum Biomedical and Health Informatics Academic Leaders Community, Chair-elect (2023)

AMIA Fall Symposium: 1998-2021 (attendance at all but 1 meeting)

AMIA Fall Symposium Panels: 7 (4, as Chair)

AMIA Pre-Conference Symposium: 1 (as Chair)

AMIA Fall Symposium Program Committee, Member (2005)

AMIA 10x10 Course on Healthcare Interface Design (2011-2018)

AMIA Fall Symposium Tutorials: 7

AMIA Task Force on EHR Usability, Member (2011-2022)

AMIA Working Group on Clinical Informatics in Intensive Care, Senior Advisor

AMIA Fall Symposium, Session Chair for multiple meetings

AMIA Summit attendance: 5

AMIA Clinical Informatics Conference attendance: 3

AMIA Fall Symposium Proceedings, full papers: 22

AMIA Fall Symposium Proceedings, abstracts: 30

JBI papers: 17

JAMIA papers: 3

JBI Special Issues: Guest Editor for 2

JAMIA, JBI, and AMIA: Reviewer of numerous papers

### **Informatics Interests**

Big Data, Clinical Decision Support, Clinical Workflow, Data Science, Education, Electronic Health Records, Health Information Technology, Health Services Research, Human Computer Interaction, Human Factors, Interoperability, Knowledge Discovery, Knowledge Representation, Meaningful Use, Outcomes Research, Patient Safety, People and Organization Issues, Public Policy, Quality Improvement, Research