2021 Election for Board Director

Candidate

Yuan Luo

Professional Title And Affiliation

Chief AI Officer and Associate Professor, Northwestern University Feinberg School of Medicine

Personal Statement

My enthusiasm and loyalty to informatics and specifically to AMIA is fully spoken of by my over-a-dozen-years, dedicated commitment to AMIA since 2006 when I helped organize i2b2 challenges as part of AMIA Annual Symposium. My academic successes, professional experiences, strategic thinking and executive education carved out my qualifications to serve AMIA at the next level. AMIA Board of Directors embody a cross generational diversity that is a key element to its continued success and growth. As a representative of fast rising, younger generation biomedical informatician at the crossroads of AI and medicine, I bring unique vision to AMIA Board of Directors and I am a vibrant addition to AMIA leadership.

Informatics Interests

Having earned my PhD degree from MIT EECS with a math minor and a certificate in Graduate Education of Medical Science (GEMS), my research interests focus on intersecting artificial intelligence/machine learning (AI/ML) and informatics for translational medicine. My work expresses the following common credos: (1) models and analytics are built for improving clinicians' practice and facilitating medical knowledge advancement, thus they need to be both accurate and interpretable, (2) models and analytics need to be easily generalizable from one disease to another, instead of building disease specific models from scratch, (3) models and analytics should be capable of easily integrating and abstracting from different sources and/or modalities of data. My PhD Thesis was awarded the inaugural Doctoral Dissertation Award Honorable Mention by American Medical Informatics Association (AMIA) in 2017. I also won the first prize at NLP Doctoral Consortium in 2013 AMIA Annual Symposium.

Since I have been on the faculty at Northwestern, I have been leading innovative research projects on multiple front ends of AI/ML and informatics. In the recent 5 years, I have published 97 peer-reviewed papers, of which in 15 I am the first author and in 48 I am the senior author. Currently, my h-index is 24 and my publications have been cited over 2800 times according to Google Scholar, by scientists from over 28 different countries and 23 research areas. Being recognized for my novel research in informatics and AI/ML, I was elected a Fellow of AMIA in 2019. I was awarded the prestigious AMIA New Investigator Award in 2020. I have also been invited to give more than 50 guest lectures at many top universities (e.g., Harvard, Stanford, MIT, Princeton, Columbia), think tanks (e.g., DCRI), societies (e.g., American Statistical Association), industry labs (e.g., IBM research, Amazon Research).

AMIA Engagement and Participation

2019 - present, serving as Fellow of AMIA, continuing to mentor junior informaticist. To date, I have successfully mentored over 40 informatics team members, ranging from junior faculty, fellows, postdocs, and students to hospital analytics team members

2019 – present, JBI editorial board member

2019/4, AMIA KDDM working group webinar on Missing Data Imputation in Longitudinal Multi-variable Clinical Data

2018 – present, Journal of Healthcare Informatics Research Associate Editor
2018 – present, PLOS One editorial board member
2018 – present, JAMIA Open editorial board member
2018 – 2020, AMIA Membership and Outreach Committee Member
2018/12, Face of AMIA: https://www.amia.org/about-amia/leadership/faces-of-amia/yuan-luo-phd
2018/11, AMIA 2018 NLP Doctoral Consortium Judge
2018/2, JAMIA journal club on Missing Data Imputation in Clinical Data
2017/11, Plenary presentation to AMIA Annual Symposium as inaugural AMIA Doctoral Dissertation
Award Honorable Mention
2016 – 2017, Co-developed an automated AMIA submission and presentation matching and assignment system with Neil Sarkar's team at Brown. The system was later used in production mode
for AMIA 2019 review
2016/11, Tutorial to AMIA 2016 Annual Symposium on Computational Phenotyping Methods
2016/11, Co-Chair for China-America Biomedical Informatics Summit colocated with AMIA 2016 Annual
Symposium
2015 – present, SPC members for AMIA Annual Symposium 2018, 2019, AMIA Joint Summits 2017,
2020, AAAI 2019, IJCAI 2018, 2019, ACM BCB 2017, CIKM 2015 etc. See CV for more
2015 – present, AMIA NLP working group, AMIA KDDM working group members
2015/11, Invited presentation at AMIA Imaging Informatics Working Group
2014 – 2015, JAMIA student editorial board member
2014 – present, Session chairs for AMIA Annual Symposia and Joint Summits
2013 – present, In-person presentations at AMIA Annual Symposia and Joint Summits
2013/11, Presented to Natural Language Processing Doctoral Consortium and won first prize
2011 – present, Reviewer for AMIA endorsed journals including JAMIA, JBI etc.
2010 – present, Reviewer for AMIA Annual Symposia and AMIA Joint Summits
2006 – 2007, Organizing team member of i2b2 shared task de-identification and smoking challenges at

AMIA Annual Symposium (data annotation, preparation, submission evaluation and review, manuscript
preparation etc.)

Participation in other organizations

Senior Member of Institute of Electrical and Electronics Engineers

Lifetime Member of American Association for the Advancement of Artificial Intelligence

2018 - present Bluhm Cardiovascular Institute Research/Innovation and Education Committee
2018 - present Co-Chair, eMERGE NLP Working Group
2014 – 2016 AAAS/Science Program for Excellence in Science

Member of American Association for the Advancement of Science

Track Co-Chair IEEE International Conference for Healthcare Informatics (ICHI) 2020
Chair of Healthcare Data Analytics Challenge, and Organizing Committee Member, IEEE ICHI 2019

Scientific Program Committee Member for major AI conferences
- AAAI Conference on Artificial Intelligence (AAAI) 2017 - 2021
- International Joint Conference on Artificial Intelligence (IJCAI) 2018, 2019, 2020
- The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2021
- International Conference on Computer Vision (ICCV) 2021
- IEEE International Conference on Biomedical and Health Informatics (BHI) 2019
- IEEE ICHI 2018, 2019, 2020
- IEEE CHASE 2018
- HealthNLP 2018
- ACM BCB 2017
- Conference on Information and Knowledge Management (CIKM) 2015

2018 - present, Associate Editor for Journal of Healthcare Informatics Research (JHIR)
2018 – present, PLOS One, editorial board member

Education and Experience

EDUCATION AND TRAINING

Massachusetts Institute of Technology	PhD	2015	Computer Science, minor in Mathematics
Massachusetts Institute of Technology	Certificate	2015	Graduate Education in Medical Sciences
State University of New York at Albany	MS	2007	Computer Science

Tsinghua University BS 2005 Electrical Engineering

ACADEMIC APPOINTMENTS
2020/3 – present Chief AI Officer
Northwestern University Institute for Augmented Intelligence in Medicine

2019/9 – present Associate Professor
Department of Preventive Medicine, Division of Health and Biomedical Informatics
Department of Industrial Engineering and Management Science (by Courtesy)
Department of Computer Science (by Courtesy)

2019/5 – present Chief AI Officer
Northwestern University Clinical and Translational Sciences Institute

2015/9 – 2019/8 Assistant Professor
Department of Preventive Medicine, Division of Health and Biomedical Informatics
Department of Industrial Engineering and Management Science (by Courtesy),
Department of Electrical Engineering and Computer Science (by Courtesy)

Recent Publications
5 Selected Publications:

Y Luo, AR Sohani, Hochberg E, P Szolovits. Automatic Lymphoma Classification with Sentence Subgraph Mining from Pathology Reports. Journal of the American Medical Informatics Association (JAMIA) 2014 21(5):824-832. PMCID: 4147603

Y Luo, Y Xin, E Hochberg, R Joshi, O Uzuner, P Szolovits. Subgraph Augmented Non-Negative Tensor Factorization (SANTF) for Modeling Clinical Text. Journal of the American Medical Informatics Association (JAMIA) 2015 22(5) 1009-1019 doi: 10.1093/jamia/ocv016. PMCID: 4986663

Y Luo. Recurrent Neural Networks for Classifying Relations in Clinical Notes. Journal of Biomedical Informatics (JBI) 2017 72 85-95 PMID : 28694119

Y Luo, P Szolovits, A Dighe, J Baron. 3D-MICE: Integration of Cross-Sectional and Longitudinal Imputation for Multi-Analyte Longitudinal Clinical Data. Journal of the American Medical Informatics Association (JAMIA) 2018 25(6) 645-653: doi: 10.1093/jamia/ocx133. PMID: 29202205

Y Luo†, A Eran†, N P. Palmer, P Avillach, A Levy-Moonshine, P Szolovits, I S. Kohane. A Multidimensional Precision Medicine Approach Identifies an Autism Subtype Characterized by Dyslipidemia. Nature Medicine 2020 https://doi.org/10.1038/s41591-020-1007-0.

Honors and Awards

Nov. 2013	First prize in AMIA 2013 Natural Language Processing Doctoral Consortium
2014 – 2016	AAAS/Science Program for Excellence in Science
Jun. 2017	Inaugural AMIA Doctoral Dissertation Award Honorable Mention
Oct. 2019	Fellow of American Medical Informatics Association
Oct. 2020	AMIA New Investigator Award

Evidence of Strategic Thinking/Experience in Activities of AMIA or another non-profit or institution

I have demonstrated strategic thinking and experience both at local institution and at AMIA. At Northwestern University Feinberg School of Medicine, leveraging my strengths in basic methodology and translational science research, I quickly established myself as the go-to person at Feinberg for machine learning and artificial intelligence. I have been functioning as a hub of AI expertise in the medical school and fostering cross-disciplinary research with over 30 of PI-level collaborators across the specialty of cardiology, oncology, surgery, critical care, pediatrics, internal medicine, transplantation, etc. I have mentored over 40 informatics team members, ranging from junior faculty, fellows, postdocs, and students to hospital analytics team members. My strategic thinking and experiences were acknowledged by my role as Chief AI Officer for the Northwestern CTSA, and led to the establishment of the new Institute for Augmented Intelligence in Medicine where I also serve as Chief AI Officer.

At AMIA, when serving on the Membership Committee, I strived to generalize my success of using AI to positively change health informatics and to advocate and bridge a tighter connection between the informatics and AI communities. I also leveraged my network in the IEEE community and AAAI community to advocate for AMIA. In 2020, I was asked by Dr. Patricia Dykes, Board Chair at AMIA, to provide consultation on the strategic planning process regarding AI and informatics for AMIA. I believe that now is the best time for the strategic growth of AMIA especially if we can tap into the growth of AI/ML and realize its potential in healthcare. Besides getting technical things right such as generating AI-ready data, we also need to pay special attention to sustain effective branding and marketing strategies of AMIA. To hone my strategic thinking in branding and marketing, I completed a series of Executive Education programs at the world-renowned Kellogg Business School, e.g., Kellogg on Branding and Advanced Marketing Management. These experiences collectively position me uniquely well to think strategically for AMIA and put strategies to action if I am elected to Board of Directors.

Contributions to Activities that Support Diversity, Equity, and Inclusion

I have mentored a diverse cohort of over 40 informatics team members, ranging from junior faculty, fellows, postdocs, and students to hospital analytics team members. Roughly half of my mentees are female (20). My mentees also come from diverse racial and ethnic groups (e.g., a Black junior faculty for his K01 award, students from underdeveloped countries such as Cambodia). In addition to striving to support diversity, equity and inclusion at local institution, I also volunteered as reviewers for AMIA's CV and Resume Review Services and helped postdocs and students from diverse groups of AMIA Annual Symposia attendees.

During the time of COVID-19, I have also had a unique experience in supporting Diversity, Equity, and Inclusion. Throughout the past few months we have all seen that anti-Asian hate and xenophobia has escalated. I have been advocating for Bystander Intervention Workshop to stop anti-Asian hate, which received wide support from Northwestern University and medical school leadership. We are currently organizing joint statements from multiple research communities on anti-Asian hate in order to sustain and promote Asian minorities' community engagement and career development.