Curriculum Vitae

NAME: **Lixia YAO**

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EDUCATION

Ph.D. in Biomedical Informatics   **2010**
Columbia University, New York, NY
        Advisor: Andrey Rzhetsky

M.Sc. in Computational Sciences   **2004**
National University of Singapore, Singapore
        Advisor: Yuzong Chen

B.Eng. in Chemical Engineering   **2002**
Dalian University of Technology, Dalian, China

ACADEMIC APPOINTMENTS

09/2016 – present   Assistant Professor in Biomedical Informatics

Department of Human Sciences Research, Mayo Clinic, Rochester, MN

08/2013 – 09/2016 Assistant Professor in Health Informatics

Department of Software and Information Systems

The University of North Carolina at Charlotte, Charlotte, NC

05/2010 – 08/2013 Principal Investigator

GlaxoSmithKline, King of Prussia, PA

PROFESSIONAL ORGANIZATIONS

2013 – Present   Health Information and Management Systems Society (HIMSS)

2007 – 2010   International Society for Computational Biology (ISCB)

2005 – Present   American Medical Information Association (AMIA)

PROFESSIONAL ACTIVITIES

Intramural Committees:

2017 – present   Web development subcommittee, vice chair, Division of Biomedical Statistics and

Informatics, Department of Human Sciences Research, Mayo Clinic

2014 – 2016	Faculty Competitive Grants Review Committee, The University of North Carolina at Charlotte
2014 – 2015	PhD Admission Committee, Department of Software and Information Systems, The University of North Carolina at Charlotte
2014 – 2015	Graduate Education Committee, Department of Software and Information Systems, The University of North Carolina at Charlotte
2014 – 2015	College Research Committee, College of Computing and Informatics, University of North Carolina at Charlotte
2013 – 2014	Faculty Research Committee, Department of Software and Information Systems, The University of North Carolina at Charlotte

Extramural Committees:

Conference Program Committee Chair/Track Chair:

2017	International Workshop on Social Media in Health Care, The 8th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB), Boston, USA (submitted)
2017	Social media and patient-centered research: benefits, challenges and opportunities for informatics Workshop, American Medical Informatics Association, Washington DC, USA (submitted)
2016	The 2nd Workshop on Data Management and Analytics for Medicine and Healthcare at the 42nd International Conference on Very Large Data Bases (VLDB), New Delhi, India

Conference Program Committee Member:

2018	The 11th International Conference on Health Informatics (HEALTHINF), Madeira, Portugal
2017	Special Track on Intelligent Systems in Healthcare and mHealth for Health Outcomes, in conjunction with the 30th International Conference on Industrial, Engineering, Other Applications of Applied Intelligent Systems (IEA/AEI), Arras, France
2016	The 10th International Conference on Health Informatics, Rome, Italy
2015	The First International Workshop on Data Management and Analytics for Medicine and Healthcare (DMAH), in conjunction with the 41st International Conference on Very Large Data Bases, Hawaii, USA
2015	The 8th International Conference on Health Informatics (HEALTHINF), Lisbon, Portugal
2013	The 6th International Conference on Health Informatics (HEALTHINF), Barcelona, Spain
2011	Sharing Science Committee, GSK R&D, King of Prussia, PA, USA

Grant Reviewer:

2017	Biomedical Computing and Health Informatics (BCHI) study session, NIH
2015	Faculty Competitive Research Grants, The University of North Carolina at Charlotte

Editorial Activities:

Editorial Board Member:

2015 – 2018	PLoS ONE, Academic Editor

Journal Reviewer:

BioMed Research International
PLoS ONE
PLoS Computational Biology
Applied Clinical Informatics
The Journal of Pharmacogenomics
Bioinformatics
Current Pharmaceutical Biotechnology
European Journal of Medicinal Chemistry
Theoretical Chemistry Accounts: Theory, Computation, and Modeling

Conference Reviewer:

2017	AMIA Annual Symposium
2015	AMIA Annual Symposium
2015	AMIA Joint Summits on Translational Science
2010	AMIA Joint Summits on Translational Science
2008	AMIA Joint Summits on Translational Science

Honors/Awards:

2015	Best Paper Award, Data Mining in Biomedical Informatics and Healthcare (DMBIH) Workshop, IEEE International Conference on Data Mining (ICDM)
2015	Third Place Award in the Research Paper Competition, the 15th Annual Graduate Research Symposium, The University of North Carolina at Charlotte
2009	National Graduate Student Research Festival Award, NIH
2008	Annual Student Research Award, Nucleic Acid Research and Oxford Journals
2008	Best Poster Award on the 4th International Society for Computational Biology (ISCB) Student Council Symposium
2005	Fellowship, Graduate School of Arts and Sciences, Columbia University

Invited Talks/Presentations:

Invited Talks:

2016	Health research opportunity index measures the misalignment of biomedical needs and resources, Ohio State University, Columbus, OH
2016	Health ROI as a measure of misalignment of biomedical needs and resources, Weill Cornell Medical College, New York, NY
2016	A health research opportunity index reveals the (ir)rational allocation of research resources to health needs, University of Pittsburgh, Pittsburgh, PA
2016	A health research opportunity index reveals misbalance between research resources and disease burden across the medical landscape, Brown University, Providence, RI
2016	A missing piece in drug discovery and development - mining patient-reported medication outcomes on social media, Xiamen University, China
2015	Understanding the (ir)rationality of research resource allocation to health needs in the US, Tongji University, China
2015	A health research opportunity index reveals misbalance between research resources and disease burden across the medical landscape, the University of Texas Health Science Center at Houston, Houston, TX
2013	Drug repositioning – lessons learned from pharmaceutical industry, Wake Forest University, Winston Salem, NC

2013   A bird's-eye view of health informatics, The University of North Carolina at Charlotte, Charlotte, NC
2010   Towards computational drug discovery, GlaxoSmithKline, King of Prussia, PA
2010   Inside pharmaceutical R&D: a computational biologist's perspective, Peking University Health Science Center, Beijing, China

Oral Presentations:

2016   Evaluation of the informatician perspective: determining types of Research Papers Preferred by Clinicians, The 5th International Conference on Intelligent Biology and Medicine (ICIBM), Houston, TX
2016   Health research opportunity index measures the misalignment of biomedical needs and resources, The 2nd International Symposium on Bioinformatics and Drug Design, Chongqing, China
2015   A survey of social media for understanding patient-reported medication outcomes. The American Medical Informatics Association Annual Symposium, San Francisco, CA
2012   Leveraging Electronic Health Records for Drug Discovery, Bio-IT World Conference & Expo, Boston, MA
2011   Benchmarking Ontologies: Bigger or Better? Highlight Track presentation, 19th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB), Vienna, Austria

Poster Presentations:

2016   A Proof-of-Concept Study of Mining Social Media to Reposition Drugs. The International Society For Pharmacoeconomics and Outcomes Research (ISPOR) 21st Annual International Meeting, Washington DC
2016   A Content Analysis of Patient-Reported Medication Outcomes on Social Media. Bio-IT world conference, Boston MA
2015   30 Day Hospital Readmission Analysis. 2015 IEEE International Conference on Big Data, Santa Clara CA
2015   A Survey of Clinicians' Literature Reading Preferences. AMIA Joint Summits on Translational Science, San Francisco
2013   Systematic Evaluation of Unmet Medical Needs from Multiple Dimensionalities – A Feasibility Study. AMIA Annual Symposium, Washington DC
2012   Mining Electronic Health Records to Identify Drug Combinations. AMIA Annual Symposium, Chicago, IL
2011   Mining Electronic Health Records to Repositioning Drugs: a Feasibility Study. AMIA Annual Symposium, Washington DC
2009   Quantitative Systems-Level Determinants of Drug Targets. The National Institute of Health, Bethesda MD
2008   Quantitative Systems-Level Determinants of Drug Targets. The 16th International Conference on Intelligent Systems for Molecular Biology (ISMB), Toronto, Canada (Best poster award)

Tutorials, Workshops and Panels:

2011   Model-Based Drug Development: How In-silico Approaches Are Reshaping the Clinical Enterprise, Drug Information Association 47th Annual Meeting, Chicago, IL
2010   Towards Mining Drug-Phenotype Data: Context-Based Calculation of Probabilistic Semantic Similarity, Pacific Symposium on Biocomputing (PSB), Big Island, HI

RESEARCH PROGRAM

Current Grants:
Career Development Award (7K01LM012102-02)   Lixia Yao (PI)   05/01/2016 – 04/30/2019
National Library of Medicine,   ADC: $551,879

Completed Grants:
North Carolina Data Science and Analytics Initiative   Lixia Yao (PI)   09/01/2015 – 06/30/2017
UNC Charlotte,   ADC: $77,250

CCI Faculty Innovation Grant   Lixia Yao (PI)   01/31/2016 – 06/30/2016
UNC Charlotte,   ADC: $31,500

NSF I-Corps Accelerator   Lixia Yao (PI)   05/19/2015 – 05/18/2016
UNC Charlotte Site,   ADC: $3,000

Faculty Research Grant   Lixia Yao (PI)   07/01/2014 – 12/31/2015
UNC Charlotte,   ADC: $3,889

Data Science and Business Analytics Seed Fund   Lixia Yao (co-PI)   12/01/2014 – 06/30/2015
UNC Charlotte,   ADC: $38,587 (CCI portion)

PUBLICATIONS

Peer Reviewed Articles - Journal:

1. Evaluation of the informatician perspective: determining types of research papers preferred by clinicians. Ru B, Wang X, **Yao L***, accepted by BMC Medical Informatics and Decision Making (2017)

2. Pattern genes suggest functional connectivity of organs. Qin Y, Pan J, Cai M, **Yao L**, Ji Z. Scientific Reports, 6:26501 (2016)

3. Health ROI as a measure of misalignment of biomedical needs and resources. **Yao L***, Li Y, Ghosh S, Evans JA, Rzhetsky A. Nature Biotechnology, 33(8): 807-811 (2015)
   The interactive visualization tool: https://cci-hit.uncc.edu/ROI.html

4. In Silico search for drug targets of natural compounds. **Yao L***. Current Pharmaceutical Biotechnology. 13(9):1632-1639. (2012)

5. Electronic health records: implications for drug discovery. **Yao L**, Zhang Y, Li Y, Sanseau P and Agarwal P. Drug Discovery Today. 16(13-14):594-599 (2011)

6. Benchmarking ontologies: bigger or better? **Yao L**, Divoli A., Mayzus I, Evans JA, and Rzhetsky A. PLoS Comput Biol. 7(1): e1001055. (2011)

7. Novel opportunities for computational biology and sociology in drug discovery. **Yao L**, Evans JA, and Rzhetsky A. Trends in Biotechnology, 28(4):161-170. (2010)

8. Quantitative systems-level determinants of human genes targeted by successful drugs. **Yao L**, and Rzhetsky A. Genome Research, 18(2): 206-213. (2008) (Cover Article)

9. Does drug-target have a likeness? Chen X, Fang Y, **Yao L**, Chen Y, Xu H. Methods of Information in Medicine, 46(3):360-6. (2007)

10. Internet resources related to drug action and human response: a review. **Yao L**, Wu Z, Ji Z, Chen Y, and Chen X. Applied bioinformatics 5(3): 131-139. (2006)

11. Internet resources for proteins associated with drug therapeutic effects, adverse reactions, and ADME. Ji Z, Sun L, Chen X, Zheng C, **Yao L**, Han L, Cao Z, Wang J, Yeo WK, Cai C, and Chen Y. Drug Discovery Today, 8(12): 526-529. (2003)

12. KDBI: kinetic data of bio-molecular interactions database. Ji Z, Chen X, Zheng C, **Yao L**, Han L, Yeo WK, Chung P, Puy H, Tay YT, Muhammad A, and Chen Y. Nucleic Acids Research, 31(1): 255-257. (2003)

Peer Reviewed Articles - Conference:

13. Detecting drinking-related contents on social media by classifying heterogeneous data types. ElTayeby O, Eaglin T, Abdullah M, Burlinson D, Dou W, **Yao L***. The 30th International Conference on Industrial, Engineering, Other Applications of Applied Intelligent Systems (Special Track: Intelligent Systems in Healthcare and mHealth for Health Outcomes), Arras, France (2017)

14. Estimating disease burden using Google Trends and Wikipedia data. Qiu R, Hadzikadic M, **Yao L***. The 30th International Conference on Industrial, Engineering, Other Applications of Applied Intelligent Systems (Special Track: Intelligent Systems in Healthcare and mHealth for Health Outcomes), Arras, France (2017)

15. Identifying serendipitous drug usages in patient forum data – a feasibility study. Ru B, Warner-Hillard C, Ge Y, **Yao L***, The 10th International Conference on Health Informatics (HEALTHINF), Porto, Portugal (2017) (Acceptance rate: 21%)

16. A content analysis of patient-reported medication outcomes on social media. Ru B, Harris K, **Yao L***. The Data Mining in Biomedical Informatics and Healthcare (DMBIH) workshop, IEEE International Conference on Data Mining (ICDM), Atlantic City, NJ (2015) (Best Paper Award)

Peer Reviewed Short Papers/Extended Abstracts:

1. Identification of clinically meaningful clusters of multi-morbidity in a national cohort of adults using unsupervised learning. Ngufor C, McCoy R, **Yao L**, Sangaralingham L, Dunlay S, Shah N. The American Medical Informatics Association Annual Symposium, Washington DC, 2017 (submitted)

2. Quality measure analytics using electronic health records: towards a new paradigm of improving patient centered outcomes. Wang X, Katz M, Fakess J, **Yao L**, Darby R, Andrews R. The American Medical Informatics Association Annual Symposium, Washington DC, 2017 (submitted)

3. A survey of social media for understanding patient-reported medication outcomes. Harris K, Ru B, **Yao L***. The American Medical Informatics Association Annual Symposium, San Francisco, CA, 2015

Abstracts/Posters:

4. A proof-of-concept study of mining social media to reposition drugs. Ru B and **Yao L***, The International Society For Pharmacoeconomics and Outcomes Research (ISPOR) 21st Annual International Meeting, Washington DC, 05/2016

5. 30 day hospital readmission analysis. Maddipatla R, Hadzikadic M, Misra-Patel D, **Yao L***. 2015 IEEE International Conference on Big Data, Santa Clara CA, 11/2015

6. A survey of clinicians' literature reading preferences, Ru B and **Yao L***. American Medical Informatics Association (AMIA) Joint Summits on Translational Science, San Francisco, 03/2015

7. Systematic evaluation of unmet medical needs from multiple dimensionalities – A Feasibility Study, Li Y and **Yao L***. American Medical Informatics Association (AMIA) Annual Symposium, Washington DC, 11/2013

8. Mining electronic health records to identify drug combinations, **Yao L,** Agarwal P. American Medical Informatics Association (AMIA) Annual Symposium, Chicago, IL, 11/2012

9. Mining electronic health records to repositioning drugs: a feasibility study, **Yao L,** Agarwal P. American Medical Informatics Association (AMIA) Annual Symposium, Washington DC, 10/2011

10. Towards mining drug-phenotype data: context-based calculation of probabilistic semantic similarity, **Yao L**, Rzhetsky R. Pacific Symposium on Biocomputing (PSB), Big Island, Hawaii, 01/2010

11. Quantitative systems-level determinants of drug targets, **Yao L.** National Graduate Student Research Festival, The National Institute of Health, Bethesda MD, 11/2009

12. Quantitative systems-level determinants of drug targets, **Yao L**, Rzhetsky R. International Conference on Intelligent Systems for Molecular Biology (ISMB), Toronto, Canada, 07/2008 (Best Poster Award)

Other publications:
1. The application of information technology in drug discovery and development. **Yao L***, Yang L, Overseas Scholars, a Journal of Chinese Association for Science and Technology, USA, 2013 (ISSN: 1556-861X)

TEACHING & MENTORING ACTIVITIES

Graduate Courses:
2017	CSTA: Introduction to Regulatory Science, Mayo Clinic, Co-Instructor
2016	ITIS 8010: Foundation of Health Informatics, UNC Charlotte, Instructor
2015	HCIP 6160/DSBA 6160: Database Systems, UNC Charlotte, Instructor
2015	HCIP 6396: Business Intelligence in Health Informatics, UNC Charlotte, Instructor
2014 – 2016	HCIP 6198: IT Internship Project, UNC Charlotte, Instructor

2014 – 2015   HCIP 6392: Enterprise Clinical Information Systems, UNC Charlotte, Instructor
2014   HCIP 5375: Computer Vocabulary and Programming Systems, UNC Charlotte, Instructor
2013   ITSC 8110 Introduction to IT Research, UNC Charlotte, Co-Instructor
2013   INFO 8800 Information Systems Research Seminar, UNC Charlotte, Co-Instructor

Supervision and Mentoring:

PhD Students:

2015 – 2016   Riyi Qiu, Department of Software and Information Systems, University of North Carolina at Charlotte
2015 – 2016   Ali Algarni, Department of Software and Information Systems, University of North Carolina at Charlotte
2014 – present   Boshu Ru, Department of Software and Information Systems, University of North Carolina at Charlotte
2014   Chenjun Ling, Department of Software and Information Systems, University of North Carolina at Charlotte

Master Students:

2016 – present   Kui Wang, Mayo Clinic
2015 – 2016   Charles Warner-Hillard, University of North Carolina at Charlotte
                      Now assistant researcher at University of Wisconsin-Madison
2015 – 2016   Sri Harsha Degala, University of North Carolina at Charlotte
                      Winner in Data Challenge at Teradata PARTNERS conference 2016
2015   Sri Satya Chanakya, University of North Carolina at Charlotte
2015   Christine Stephenson, University of North Carolina at Charlotte
2015   Ratna Madhuri Maddipatla, University of North Carolina at Charlotte
                      Now consultant at McKinsey & Company
2014 – 2015   Kimberly Harris, University of North Carolina at Charlotte
                      Now analyst at UnitedHealth Group
2014 – 2015   Gregory Turner, University of North Carolina at Charlotte
2014 – 2015   Lan Xu, University of North Carolina at Charlotte
2014 – 2015   Violet Cook, University of North Carolina at Charlotte
2014 – 2015   Ashu Gulati, University of North Carolina at Charlotte
2014 – 2015   Depeka Seal, University of North Carolina at Charlotte
2014 – 2015   Robert D. Shorter, University of North Carolina at Charlotte

Undergraduate Students:

2015 – 2016   Yuliya Atrasevich, University of North Carolina at Charlotte

High school Students:

2003   Chin Siang Ong from Raffles Junior College, Singapore
                      Gold award winner at Singapore Science and Engineering Fair 2004

Summer Interns:

2017   Omar Eltayeby, University of North Carolina at Charlotte
2017   Thanh Le, Pennsylvania State University
2012   Ying Li, Columbia University

Now research staff member at IBM Watson Research Center
2011   Ping Zhang, Temple University
             Now research staff member at IBM Watson Research Center

Thesis/Dissertation Committee:

2016 – present   Jingyi Shi, PhD candidate, University of North Carolina at Charlotte, Committee Member
2015 – present   Yi Zhen, PhD candidate, University of North Carolina at Charlotte, Committee Member
2014 – present   Boshu Ru, PhD candidate, University of North Carolina at Charlotte, Committee Chair
2014 – 2016   Adam Price, PhD candidate, University of North Carolina at Charlotte, Committee Member