Approved by the Regents
May 17, 2012

PROMOTION RECOMMENDATION
The University of Michigan
School of Public Health
Department of Health Management and Policy
School of Information

Kai Zheng, assistant professor of health management and policy, Department of Health Management and Policy, School of Public Health, and assistant professor of information, School of Information, is recommended for promotion to associate professor of health management and policy, with tenure, Department of Health Management and Policy, School of Public Health, and associate professor of information, without tenure, School of Information.

Academic Degrees:

Ph.D.	2006	Carnegie Mellon University, Pittsburgh PA
B.E.	1999	Shanghai Jiaotong University, Shanghai, China

Professional Record:

2006 to present	Assistant Professor of Health Management and Policy, School of Public Health, University of Michigan
2006 to present	Assistant Professor of Information, School of Information, University of Michigan
2004-2004	System Analyst, Carnegie Mellon University
2001-2006	Research Assistant/Technical Lead, Western Pennsylvania Hospital Department Medicine
1997-1999	Webmaster, Global Sources Information Center, China Europe International Business School

Summary of Evaluation:

Teaching: Professor Zheng's core teaching is four classes regarding health information technology (IT), offered in both the residential and executive master's degree programs in the Department of Health Management and Policy (HMP) (one course is cross-listed with Bioinformatics in the Medical School). These courses are (1) HMP668: Introduction to Health Informatics, a comprehensive introductory course to the field of health informatics (elective, master's level); (2) BIOINF555/HMP696: Concepts in Health Informatics, a survey course focusing on research methods in health informatics (elective, doctoral/master's level, offered through the Medical School Bioinformatics Graduate Program since 2009); (3) HMP605: Health Information Technology, an introductory course on health IT policy and management (part of the core curriculum for all master's-level students in the Department of HMP); and (4) HMP669: Database Systems and Internet Applications in Health Care (elective, master's level). The first three of these courses were developed by Professor Zheng while the fourth one was an overhaul of an existing course. HMP605 is particularly notable because it is the first required IT course in the Department of HMP and serves to meet a set of core competencies that will be assessed as part of the upcoming re-accreditation of our master's programs. Most assistant professors do not develop so many new offerings. Given the increasing importance of health information technology, having a cutting edge faculty member like Professor Zheng has been crucial to the development of an up-to-date curriculum for our students.

Research: The guiding insight behind Professor Zheng's research agenda is the observation that healthcare is the last major industry that has not fully utilized the advances of information technology to improve its efficiency and quality of services. While costs and misaligned incentive structures

continue to be cited as principal reasons, they do not explain why many systems that have been successfully deployed in a technical sense have nonetheless failed to deliver their anticipated value, and why even in well-resourced and well-managed healthcare organizations, the introduction of health IT often results in unintended, adverse consequences. Professor Zheng believes that a fundamental barrier lies in the lack of usability of the current generation of health IT systems, resulting in clinicians' lack of enthusiasm and acceptance. Therefore, Professor Zheng focuses on health informatics research that is not only about developing novel technological innovations, but also pays close attention to design and implementation details that may jeopardize usability in the context of end users' day-to-day work routines. Professor Zheng has studied these usability and user acceptance related issues at three conceptual levels: (1) Interaction design and information presentation: development of more intuitive human-machine interfaces, in addition to more effective data and information representations, to better align technology with clinicians' mental model of information seeking and decision making; (2) Cooperative work and workflow: identification of mindful designs that will prime health IT systems to facilitate, rather than hinder, team cooperation and clinical workflow; and (3) Health IT as socio-technical systems: studies of societal and organizational factors that may affect clinicians' perception of usefulness and usability of technology. Work in these areas has resulted in publications in the *Journal of the American Medical Informatics Association* (*JAMIA*) and prestigious human-computer interaction and health informatics conference proceedings, in addition to grant support received from federal agencies including the National Library of Medicine (NLM), the Agency for Healthcare Research and Quality (AHRQ), the Centers for Disease Control and Prevention (CDC), the Department of Veterans Affairs (VA), and the Department of Defense (DoD). Professor Zheng recently received major recognition for this research agenda as the recipient of the American Medical Informatics Association's prestigious New Investigator Award.

Recent and Significant Publications:

Perry EE, Zheng K, Ferris ME, Torres L, Bickford K, Segal JH. Adolescents with chronic kidney disease and their need for online peer mentoring: A qualitative investigation of social support and healthcare transition. *Ren Fail*. 2011;33(7):663-8. PMID: 21787155

Goodrich DE, Buis LR, Janney AW, Ditty MD, Krause CW, Zheng K, Sen A, Strecher VJ, Hess ML, Piette JD, Richardson CR. Integrating an Internet-mediated walking program into family medicine clinical practice: A pilot feasibility study. *BMC Med Inform Decis Mak*. 2011;11:47. PMID: 21702957

Dennehy P, White M, Hamilton A, Pohl JM, Tanner C, Onifade TJ, Zheng K. A partnership model for implementing electronic health records in resource-limited primary care settings: Experiences from two nurse managed health centers. *J Am Med Inform Assoc*. 2011. Published Online First: 9 August 2011. PMID: 21828225

Zheng K, Hanauer DA, Padman R, Johnson MP, Hussain AA, Ye W, Zhou X, Diamond HS. Handling anticipated exceptions in clinical care: Investigating the benefits and consequences of providing "exit strategies" in an electronic health records system. *J Am Med Inform Assoc*. 2011. Published Online First: 14 June 2011. PMID: 21676941

Zheng K, Fear K, Chaffee BW, Zimmerman CR, Karls EM, Gatwood JD, Stevenson JG, Pearlman MD. Development and validation of a survey instrument for assessing prescribers' perception of computerized drug-drug interaction alerts. *J Am Med Inform Assoc*. 2011. Published Online First: 12 April 2011. PMID: 21486876

Zheng K, Guo MH, Hanauer DA. Using the time and motion method to study clinical work processes and workflow: Methodological inconsistencies and a call for standardized research. *J Am Med Inform Assoc*. 2011;18(5):704-10. PMID: 21527407

Service: Professor Zheng's main contributions to service within the department/SPH have been strong service on the admissions/curriculum and technology committees and advising students working on HIT issues. In the former role, he has created the information system we now use to manage application materials for our master's program, a major and extremely valuable task. Besides participating in the planning and the curriculum committee to develop the master's degree program in health informatics, he has also been engaged in service activities with the University of Michigan Health System (e.g., participating in the organization's IT implementation and evaluation projects, serving as the research coordinator of UMHS Nursing Informatics, serving on the planning committee of the Inpatient Nursing/Respiratory Therapy Documentation Project, and as a faculty affiliate of the Biomedical Informatics Core of the Michigan Institute for Clinical and Health Research (MICHR). Externally, Professor Zheng has been invited to participate in several national forums on usability of health IT and on incorporation of science from other disciplines.

External Reviewers:
Reviewer A: "Professor Zheng has an impressive scholarly record…The significance of [his] work has been recognized by multiple publications in the top informatics journals…[h]is work has appeared in the Proceedings of 11 major informatics conferences…On the whole, [his] record is outstanding. His contributions both in quantity and quality far exceed those of most assistant professors…"

Reviewer B: "Professor Zheng's publication record is outstanding...[his] standing is superior to others in his peer group...There is no doubt that [he] is a very productive scholar with a national reputation…I strongly support the recommendation for his promotion…"

Reviewer C: "The area of medical informatics is extremely important nationally. Dr. Zheng's main areas of interest… are exceptionally hot in medical informatics today. Dr. Zheng is clearly a rising star in medical informatics…I am strongly supportive of this promotion."

Reviewer D: "Amazing. … He's a powerhouse, both creatively and analytically…would be lucky to have him…I recommend him unreservedly."

Reviewer E: "Dr. Zheng's publication/research record is exemplary for an Assistant Professor… I would place him near the top of his peer group…I view Dr. Zheng as one of the field's bright [junior] researchers…I have no reservations in recommending Dr. Zheng for promotion to Associate Professor with tenure."

Reviewer F: "It is my impression that his scholarly writings are of high quality. I am particularly impressed with his use of innovative visual data presentation methods. I am also impressed with his external funding record, which is outstanding."

Reviewer G: "I strongly recommend that Prof. Zheng be promoted…he has had a significant impact on the scholarly work in the field of health informatics…"

Reviewer H: "Dr. Zheng has made impressive contributions to the general area of medical informatics…I would put his achievement as outstanding in comparison with peer groups."

Summary of Recommendation: Professor Zheng is rapidly becoming one of the top scholars in the important and rapidly growing health IT field (his recent receipt of the American Medical Informatics Association's prestigious New Investigator Award is evidence of his national reputation), is crucial to our teaching programs, and has been an excellent "citizen" in terms of professional service. We are pleased to recommend him for promotion to associate professor of health management and policy, with tenure, Department of Health Management and Policy, School of Public Health, and associate professor of information, without tenure, School of Information.

Martin A. Philbert
Dean, School of Public Health

Jeffrey K. MacKie-Mason
Arthur W. Burks Collegiate Professor of Information and Computer Science, and Dean, School of Information

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