Approved by the Regents May 21, 2015

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Engineering and Computer Science

Jie Shen, associate professor of computer and information science, with tenure, Department of Computer and Information Science, College of Engineering and Computer Science, is recommended for promotion to professor of computer and information science, with tenure, Department of Computer and Information Science, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2000	University of Saskatchewan, Saskatoon, Saskatchewan, Canada
M.S.	1997	University of Saskatchewan, Saskatoon, Saskatchewan, Canada
Ph.D.	1988	Beijing University of A.E., Beijing, China
M.S.	1985	Jiangsu University of Science and Technology, Zhenjiang, China
B.S.	1982	Jiangsu University of Science and Technology, Zhenjiang, China

Professional Record:

2008 – present	Associate Professor of Computer and Information Science, Department of Computer and Information Science, University of Michigan-Dearborn
2002 – 2008	Assistant Professor of Computer and Information Science, Department of Computer and Information Science, University of Michigan-Dearborn
2000 – 2001	Computer Scientist, Altair Engineering, Inc., Troy, Michigan

Teaching: Professor Shen is rated significantly capable in teaching. Professor Shen is an excellent educator who has made significant contributions to all aspects of teaching. He has taught a variety of courses at all levels, covering areas ranging from introduction to computer science, programming languages, computer graphics, to visualization and multimedia gaming. Since his last promotion, he has taught nine courses. He has created three new courses and significantly updated several others since his last promotion. Beyond classroom instruction, Professor Shen is very keen and successful in integrating research experience into teaching. He actively provided research experience for students at all levels (undergraduate, Masters, and Ph.D.) in various forms, such as course projects, senior design projects, directed research, independent study, and thesis work.

Research: Professor Shen is rated excellent in his research. Professor Shen's primary research interests lie in the areas of modeling and simulation, geometric processing and optimization, computational science, mechanics of materials, and computer graphics. He has been conducting inter-disciplinary research on some fundamental and applied problems in engineering. In particular, he has recently refocused his efforts into the relatively new field of digital diagnosis of material damage. He created the Virtual Engineering Lab in the CIS department. Also, a unique Michigan 3D Center was established under his supervision. Professor Shen has made significant contributions to his field. Professor Shen has an excellent track record of publication, which includes 49 journal papers (36 of them were published/accepted after joining UM-Dearborn and 11 of them were published/accepted since his last promotion), 39 refereed conference papers (22 of them were published after joining UM-Dearborn and five of them were published since his last promotion), two edited proceedings (after joining UM-Dearborn), one authored book, and 22 additional technical conference papers. He is also very active in seeking external funds for his research. He secured 10

external grants for a total of $739,908 after joining UM-Dearborn (six of them for a total of $458,792 since his last promotion), which include 5 NSF grants and several industrial grants.

Recent and Significant Publications:

J. Shen, J. Mao, J. Boileau, and C.L. Chow, 'Material Damage Evaluation with Measured Microdefects and Multiresolution Numerical Analysis,' *International Journal of Damage Mechanics*, Volume 23, Number 4 (May 2014), pp. 537-566.

C.L. Chow, J. Mao, J. Shen, 'Nonlocal Damage Gradient Model for Fracture Characterization of Aluminum Alloy,' *International Journal of Damage Mechanics*, Volume 20, Number 7, (2011), pp.1073-1093.

Y. Song, S. Jin, J. Shen, 'A Unique Property of Single-Link Distance and Its Application in Data Clustering,' *Data & Knowledge Engineering*, Volume 70, Number 11 (2011), pp. 984-1003.

J. Shen, J. Mao, G. Reyes, C.L. Chow, J. Boileau, X. Su, and J.M. Wells, 'A Multiresolution Transformation Rule of Material Defects,' *International Journal of Damage Mechanics*, Volume 18, Number 8 (2009), pp. 739-758.

J. Shen, D. Yoon, D. Shehu, and C. Zhang, 'Spectral Moving Removal of Non-isolated Outlier Clusters,' *Computer-Aided Design*, Volume 41, Number 4 (2009), pp. 256-267.

Service: Professor Shen is rated excellent/significantly capable in his service. Professor Shen has made outstanding service contributions to the department, the college, the university, and his field. He was involved in seven university/campus level committees/capacities (five since his last promotion), four college level committees/capacities (all since his last promotion), and 11 department level committees/capacities (six since his last promotion). In particular, he served as the chair of the departmental undergraduate committee, which is a very important but time-consuming position. Also, he has served on the editorial boards for three journals (all since his last promotion), chaired/co-chaired nine conferences (seven since his last promotion), served as a program committee member for 18 conferences (10 since his last promotion), chaired 11 conference sessions (five since his last promotion), gave two keynote talks (both since his last promotion), and served on four professional technical committees (two since his last promotion).

External Reviewers:

Reviewer A: "Dr. Shen's research productivity is high and some of his publications appeared in the leading journals in his discipline such as *Computer-Aided Design*. ... The papers related to digital diagnosis of material for the exploration of the damage and failure mechanism of various engineering materials are critical for damage assessment and determination of the structural reliability."

Reviewer B: "In a short five year time, he has established a new research direction and has made significant progress in this field. I think the fact that he was willing to take a risk and make a major change in research focus from his comfort zone is a very positive sign of a productive researcher. ... His publication record since his last promotion is very good, though external grant activities could be better. ... I believe that Dr. Jie Shen has achieved excellence in research, and has clearly demonstrated his independent research abilities and leadership during his tenure in your department. His research results have contributed significantly to the state of the art in his field."

Reviewer C: "Lately, he has been applying modeling/simulation and geometric processing technologies into an emerging research area, digital diagnosis of material damage, and becomes a world expert in this area. ... His research work is very innovative and inspiring in both theoretical and practical aspects, and his research results appeared in the top journals in his field of study. ... I

think this work pushed towards the new research frontiers in both the geometric modeling/simulation and material damage diagnosis research fields. … I think Dr. Jie Shen is one of the top scholars among his peer group in his research field. He has demonstrated strong leadership in geometric modeling and simulation and their applications to material science."

Reviewer D: "He has proved his capability to become a forerunner in computational damage mechanics and established his reputation among his peers. … Dr. Shen has successfully received adequate amounts of internal funding and NSF equipment grants. With the establishment of his expertise and reputation based on these seed fundings, he should be ready to extend his funding sources to include more government agencies and various industries. … The number of Ph.D. graduates Dr. Shen has had should be increased. … Dr. Shen has received an NSF-I-Corp grant. This record seems to recognize the potential commercial value of his research results. He should be praised of this achievement and continue to develop the product."

Reviewer E: "Dr. Shen has established himself nationally and internationally as a recognized expert scientist in the area of fields of geometric processing, modeling the mechanics of materials, and other computational science research activities through the scientific literature. … Dr. Shen's record of 49 journal papers and 25 conference papers is very strong in comparison to his peer group and show that he is a leader in the field."

Reviewer F: "His journal papers appeared in very good journals such as *Computer-Aided Design*, *International Journal of Damage Mechanics* and *Data & Knowledge Engineering*. … I carefully read the six papers sent to me, and found that he proposed some interesting and innovative ideas to solve very challenging problems."

Summary of Recommendation: We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Jie Shen for promotion to full professor of computer and information science, with tenure, Department of Computer and Information Science, College of Engineering and Computer Science.

Anthony W. England, Dean
College of Engineering and Computer Science

Daniel Little, Chancellor
University of Michigan-Dearborn

May 2015