

BIOGRAPHICAL SKETCH

Xiaoping Qian

Mechanical, Materials and Aerospace Engineering
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A. Education

- Ph.D. Mechanical Engineering The University of Michigan, Ann Arbor, 2001
- M.S. Mechanical Engineering Huazhong University of Sci. and Tech., China, 1995
- B.S. Mechanical Engineering Huazhong University of Sci. and Tech., China, 1992

B. Appointment

- 2010 ~ present **Associate Professor**, Mechanical, Materials and Aerospace Engineering
- 2004 ~ present **Assistant Professor**, Mechanical, Materials and Aerospace Engineering
Illinois Institute of Technology, Chicago, IL
- 2006 (summer) **Guest Researcher**, Nano-manufacturing Group
NIST, Gaithersburg, MD
- 2005 (Summer) **ASEE/AFOSR Summer Faculty Fellow**
Air Force Wright-Patterson Research Lab, OH
- 2001 ~ 2004 **Research Scientist**, Product Realization Lab
General Electric Global Research Center, Schenectady, NY
- 1995 ~ 1996 **CAD Developer**, GaoHua CAD Inc.
Beijing, China

C. Selected Publications

Dr. Qian has published 29 journal papers, 1 book chapter, and 3 U.S. patents in geometric and physical modeling, computational design, and CAD/CAE/CAM. Details are available at <http://mmae.iit.edu/cadcam/>

i) Five recent publications

1. Zhao, W., Xu, K., Qian, X., and Wang, R., "Tip Based Nano Manipulation through Successive Directional Push," *ASME Journal of Manufacturing Science and Engineering*, Special Issue in Nano Manufacturing, in press
2. Qian, X., "Full analytical sensitivities in NURBS based isogeometric shape optimization," *Computer Methods in Applied Mechanics and Engineering*, in press.
3. Yang, P. and Qian, X., "Direct Boolean Intersection between Acquired and Designed Geometry", *Computer-Aided Design*, Vol. 41, No. 2, pp. 81- 94, Feb 2009.
4. Yang, P. and Qian, X., "A general, accurate procedure for calculating molecular interaction force," *Journal of Colloid and Interface Science*, Vol. 337, No. 2, pp. 594 - 605, Sep 2009.
5. Tian, F., Qian, X., and Villarrubia, J. S., "Blind estimation of general tip shape in AFM imaging," *Ultramicroscopy*, Vol. 109, No. 1, pp. 44 - 53, Dec 2008.

ii) Five other significant publications

6. Zhang, D., Yang, P., and Qian, X., "Adaptive NC Path Generation from Massive Point Data with Bounded Error," *ASME Transactions Journal of Manufacturing Science and Engineering*, Vol. 131, 011001-113, Feb 2009

7. Huang, Y. and Qian, X., "An efficient sensing localization algorithm for free-form surface digitization," *ASME Transactions Journal of Computing and Information Science in Engineering*, Vol. 8, No. 2, June 2008.
8. Qian, X. and Villarrubia, J. S., "General 3-Dimensional Image Simulation and Surface Reconstruction in Scanning Probe Microscopy using a Dixel Representation," *Ultramicroscopy*, Vol. 107, No. 13, pp. 29 - 42, Dec 2007.
9. Qian, X. and Dutta, D., "Physics Based Modeling for Heterogeneous Objects," *ASME Transactions Journal of Mechanical Design*, Vol. 125, pp. 416 - 427, Sep 2003.
10. Qian, X. and Dutta, D., "Feature Based Fabrication in Layered Manufacturing," *ASME Transactions Journal of Mechanical Design*, Vol. 123, pp. 337 - 345, Sep 2001.

D. Synergistic Activities

(i) Research Activities

- Established the Computational Design and Manufacturing research lab with external funding exceeding \$2.4 million, including support from 6 NSF grants, AFOSR grant, NIST, SME, Generic Electric, and General Dynamics,.

(ii) Innovations in Teaching and Training

- *Curriculum Enhancement*: Created a new graduate course *Nanoscale Imaging and Manipulation*. Resurrected graduate course *Design Optimization*. Taught undergraduate and graduate courses *CAD*.
- Developed an Innovative Product Development Studio, including a dedicated CAD/CAM Education Lab with computer workstations and CAD software such as Pro/Engineer and Unigraphics.

(iii) Service to the Scientific Community

- Associate Editor: *ASME Journal of Computing and Information Science in Engineering*
- Associate Editor: *SME Journal of Manufacturing Systems*
- Guest Edited a special issue on Point-Based Computing in journal *Computer-Aided Design*, 2009
- Served as the Technical Committee Chair for ASME/CIE Computer Aided Product Development, 2004 ~ 2005
- Chaired various sessions at ASME/IDETC conferences since 2003
- Organized a special panel on "Object Modeling and CAD for Emerging Bio/Micro/Nano Systems" in ASME/IDETC 2005, brought leading experts from academia and government brainstorming the future of CAD in emerging bio/micro/nano systems
- Served as a panelist and reviewer for NSF and AFOSR research programs since 2005

E. Collaborators

- **Ph.D. Advisor**: Deba Dutta (Doctoral Thesis Advisor), Professor, Department of Mechanical Engineering, The University of Michigan, Ann Arbor
- **Postdoc/Graduate Students**: **Postdoc**: Yunbao Huang (HUST), Wei Zhao, Yu Liu; **Ph.D.**: Pinghai Yang (GE Research), Kangmin Xu, Roger Li, Mingming Wang, Arash Kalantari, Songtao Xia

F. Profession Honors

- 2009 Sigma Xi/IIT Chapter **Excellence in University Research Award**, Junior Faculty Category
- 2008 **MMAE Department Excellence in Research** award
- 2007 **SME Research Initiation** award
- 2006, 2007, 2008, 2010 **NSF Fellowship** for Summer Institute on Nano Mechanics/Materials at Northwestern University
- 2004 **New Innovator Award**, Inspection & Manufacturing Technologies, GE Global Research.