

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Approved by the Regents
May 20, 2010

Kazuhiro Saitou, associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering, is recommended for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.

Academic Degrees:

Ph.D.	1996	Massachusetts Institute of Technology, Mechanical Engineering (minor in Biology), Cambridge, MA
M.S.	1992	Massachusetts Institute of Technology, Mechanical Engineering, Cambridge, MA
B. Eng.	1990	University of Tokyo, Mechanical Engineering (with honors), Tokyo, Japan

Professional Record:

2007-present	Founding member and CEO, Comnext, Inc., Tokyo, Japan
2007	Visiting Researcher, Maritime Innovation Project, University of Tokyo, Tokyo, Japan
2005	Visiting Scholar, Kyoto University, Kyoto, Japan
2004-2005	Visiting Scholar, Delft University of Technology, Delft, The Netherlands
2003-present	Associate Professor (with tenure), Department of Mechanical Engineering, University of Michigan
1998	Visiting Researcher, Molecular Computer Project, University of Tokyo, Tokyo, Japan
1997-2003	Assistant Professor, Department of Mechanical Engineering, University of Michigan

Summary of Evaluation:

Teaching: Professor Saitou has taught three required undergraduate classes in design and manufacturing (ME250, ME350, and ME450), one technical elective (ME452) and three graduate courses (ME558, ME581 and ME588). Teaching all three required classes in the undergraduate design/manufacturing series is a demanding task, and Professor Saitou is the only faculty member in ME to do so. Recently, Professor Saitou has been very involved in the revision of ME 250: Design and Manufacturing I, to include more open-ended, hands-on, mechatronics-based materials. This is an important effort that will help our students significantly in learning more modern methods in design and manufacturing at an early stage. It is clear from the student letters that they appreciate Professor Saitou's enthusiasm and effectiveness in teaching. At the graduate level, Professor Saitou has developed a new course in Discrete Design Optimization (ME558) and revamped ME 588 (Assembly Modeling in Design and Manufacturing). Professor Saitou has graduated 12 Ph.D. students and is currently advising four more. His graduate students have been publishing with him in high quality journals and two of his former students have received University of Michigan awards.

Research: Professor Saitou's research expertise is in the field of design optimization, with focuses on the product assembly and disassembly process during the early phases of design. He has developed a strong research program at Michigan, funded by various government agencies (including a NSF CAREER Award) and industry. Professor Saitou has performed pioneering research in product assembly/disassembly and has made outstanding contributions through integrating theory with practice; establishing himself as a leading researcher in this discipline. He has developed a theoretical model to capture the underlying mechanics of the assembly/disassembly process within an optimization framework. This methodology has been successfully implemented in various applications, such as in automotive product assembly. In addition to being an outstanding independent researcher, Professor

Saitou has also developed collaborative relationships with many scholars. With these collaborations, he has been able to make an even broader impact to a variety of fields. Along these lines, a planning grant was recently awarded for an NSF I/UCRC to explore the applications of his design methodology to various real-world problems. Professor Saitou has a strong publication record with 50 archival journal papers in highly ranked journals and over 90 conference papers. His papers are highly cited by other scholars and researchers. He has received a best paper award and two other best paper award nominations, indicating his publications are well recognized by his peers.

Recent and Significant Publications:

- Shalaby, M., and Saitou, K., 2009, "High-Stiffness, Lock-and-Key Heat-Reversible Locator-Snap Systems for the Design for Disassembly," *ASME Journal of Mechanical Design*, 131 (4), 041005-1 – 041005-9.
- Shalaby, M., and Saitou, K., 2009, "Optimal Heat-Reversible Snap Joints for Frame-Panel Assembly in Aluminum Space Frame Automotive Bodies," *International Journal of Sustainable Manufacturing*, 1(3), pp. 302-317.
- Park, J., Rosania, G., Shedden, K., Nguyen, M., Lyu, N., and Saitou, K., 2009, "Automated Extraction of Chemical Structure Information from Digital Raster Images," *Chemistry Central*, 3(4), doi:10.1186/1752-153X-3-4.
- Shalaby, M., and Saitou, K., 2008, "Design for Disassembly with High-Stiffness, Heat-Reversible Locator-Snap Systems," *Transactions of ASME, Journal of Mechanical Design*, 130 (12), pp. 21701-21701.
- Saitou, K., Shalaby, M., and Shu, L. H., 2008, "Bioanalogous Mechanical Joints for Authorized Disassembly," *CIRP Annals – Manufacturing Technology*, 57(1), pp. 149-152.
- Chow, L., Volakis, J., Saitou, K., and Kurabayashi, K., 2007, "Lifetime Extension of RF MEMS Direct Contact Switches in Hot-Switching Operations by Ball-Grid-Array (BGA) Dimple Design," *IEEE Electron Device Letters*, 28(6), pp. 479-481.
- Jensen, B. D., Chow, L. L.-W., Huang, K., Saitou, K., Volakis, J. L., and Kurabayashi, K., 2005, "Effect of Nanoscale Heating on Electrical Transport in RF MEMS Switch Contacts," *IEEE/ASME Journal of Microelectromechanical Systems*, 14(5), pp. 935-946.
- Jensen, B. D., Saitou, K., Volakis, J., and Kurabayashi, K., 2003, "Fully Integrated Electrothermal Multi-Domain Modeling of RF MEMS Switches," *IEEE Microwave and Wireless Components Letters*, 13(9), pp. 364-366.

Service: Professor Saitou has been an outstanding citizen, actively involved in serving the University of Michigan and the professional community. He has served on various important committees at the department level, and has been the course leader for ME 250 and the area coordinator for design and manufacturing. At the College level, he has served as a member on several committees and has chaired a promotion and tenure committee. He has also co-organized the Distinguished Innovator Seminar Series as part of the Entrepreneurship Certificate Program. At the University level, Professor Saitou has been a member of the research policies committee of the senate assembly and is currently the engineering faculty advisor of the U-M Solar Car Team. Professor Saitou's external service record is even more impressive. He has provided strong leadership to the technical community, taking up various high profile positions in various engineering societies. He is currently an associate editor for the *ASME Journal of Computing and Information Science in Engineering* and for the *IEEE Transactions on Automation Science and Engineering*. He is also on the editorial board of three other journals. Professor Saitou is the chair of the ASME Design for Manufacturing and Life Cycle Technical Committee, and is chairing the ASME Design Automation Technical Committee. He has been actively involved in organizing several important conferences in his field, including serving as the general conference chair and program chair for the ASME Design Automation Conference. Through these tremendous professional activities, Professor

Saitou has utilized his technical ability to help shape the future of his technical field and broadened his impact to engineering.

External Reviewers:

Reviewer A: "I will say up front that I think that Kazu is a star and definitely worthy of promotion at this time, and he probably could have been successfully put up for promotion a couple of years ago..... If we had a manufacturing program ..., I would do everything within my power to steal him away from you."

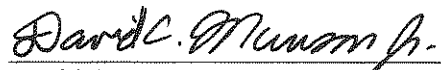
Reviewer B: "... placed himself strategically in the design for manufacture community to become one of the persons with a lasting impact, an impact that will cross disciplinary boundaries ..."

Reviewer C: "... already shows a global leadership in his area of expertise...I also found that he has worked on one consistent research theme ... design of assembly for disassembly. This topic is now his trademark."

Reviewer D: "... Dr. Saitou demonstrates a strong grasp of the fundamentals underlying investigations related to design for X and a flexibility of thought that allows him to address a range of problems..... I am persuaded that Dr. Saitou embodies a strong intellect, a strong commitment to education and shows much promise of continued development and productivity."

Reviewer E: "... Concerning the scholarly impact and quality of Dr. Saitou's work, I feel it is outstanding and worthy of admiration The research is cutting edge, the expositions are clear, and the topics are particularly relevant to current social needs for more intelligent use of natural resources."

Summary of Recommendation: Professor Saitou has established a strong national and international presence in the field of design optimization and is a recognized leader in product assembly/disassembly. He is a dedicated teacher and mentor. Professor Saitou has been an outstanding citizen and leader, serving his department, the university and the professional community with distinction. It is with the support of the College of Engineering Executive Committee that I recommend Kazuhiro Saitou for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.



David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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