The 24th JUACEP Seminar

第 24 回 名古屋大学日米協働教育プログラムセミナー

“Topology Optimization of Multi-Component Structural Assemblies”

Lecturer: **Professor Kazuhiro Saitou**

Mechanical Engineering, University of Michigan, Ann Arbor

BIOGRAPHY:

Education

University of Tokyo, Mechanical Engineering, B. Eng. with Honor, 1990.
Massachusetts Institute of Technology, Mechanical Engineering, M. S., 1992.
Massachusetts Institute of Technology, Mechanical Engineering, Ph. D., 1996.

Professional Experience

1997-2003 Assistant Professor, Mechanical Engineering, University of Michigan, Ann Arbor
2003-2010 Associate Professor, Mechanical Engineering, University of Michigan, Ann Arbor
2007-2012 Co-Founder and Chief Executive Officer, Comnext, Inc.
2011-2012 Professeur invité, École Centrale Paris
2010- Professor, Mechanical Engineering, University of Michigan, Ann Arbor

HONORS AND AWARD:

Outstanding Achievement Award, Design and Systems Division, Japan Soc. of Mech. Engnr., 2011; Senior Member, IEEE, 2007; Outstanding Achievement Award, Mech. Engg. Dept, 2007; Best Paper Awards finalist: Conf. on Automation Science and Engineering, 2006; EcoDesign: International Symp. on Environmentally Conscious Design and Inverse Manufacturing, 2005; Best Paper Award, Tools and Methods of Competitive Engineering, 2004; CAREER Award, National Science Foundation, 1999.

Date: **Tuesday, February 10, 2015**
Time: **13:00 - 14:30**
Venue: **Room 221 (Engg. Bldg. Ⅱ) *** **No registration required**

After nearly three decades of continuous development, structural topology optimization techniques are matured to the point that problems with industry-level complexity can be solved with a personal computer. However, its widespread industry adaptation is still limited since the optimized results often require manual design modifications due to poor manufacturability. In particular, it is often the case that an optimized topology must be decomposed to multiple components with simpler geometries, since manufacturing as a single piece is either impossible or uneconomical. The resulting decomposed topology is no longer optimal since the decomposition introduces the joints that have different mechanical properties from the base material. This talk intends to provide a historical overview of topology optimization techniques for designing multi-component structural assemblies including oversights in earlier approaches. Recent attempts for extending to multi-material and 3D printed structures will also be discussed.

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