

# Yi Ren

Assistant Professor  
Mechanical Engineering  
Arizona State University

yiren@asu.edu  
www.public.asu.edu/~yren32  
480.727.7009

## Education

- University of Michigan**, Ann Arbor, MI 2012  
Ph.D. , Mechanical Engineering  
Advisor: Panos Y. Papalambros  
Thesis: *Design Preference Elicitation, Identification and Estimation*
- University of Michigan**, Ann Arbor, MI 2009  
Master of Science, Mechanical Engineering
- Tsinghua University**, Beijing, China 2007  
Bachelor of Engineering, Automotive Engineering

## Research Interests

Design optimization, human computation, machine learning, and product design

## Employment

- Arizona State University**, Tempe, AZ 2014 - present  
*Assistant Professor, Mechanical Engineering*
- University of Michigan**, Ann Arbor, MI 2012 - 2014  
*Research Fellow, Optimal Design Laboratory*

## Publications

### Journal Articles

- [1] **Ren, Y.** and Papalambros, P. Y., "A Design Preference Elicitation Query as an Optimization Process", *ASME Journal of Mechanical Design*, volume 133, issue 11, 2011.
- [2] Burnap, A., **Ren, Y.**, Papalambros, P. Y., Gonzalez, R. and Gerth, R., "When Crowdsourcing Fails: A Study of Expertise on Crowdsourced Design Evaluation", *ASME Journal of Mechanical Design*, 2014 (accepted).
- [3] **Ren, Y.** and Papalambros, P. Y., "An Adaptive Questionnaire for Efficient Design Optimization", *ASME Journal of Mechanical Design, Special Issue on User Needs and Preferences in Engineering Design* (under review).

### Conference Papers

- [4] **Ren, Y.** and Papalambros, P. Y., "Design Preference Elicitation, Derivative-Free Optimization and Support Vector Machine Search", *In Proceedings of the ASME International Design Engineering*

*Technical Conferences*, DETC2010-28475, 2010.

- [5] **Ren, Y.** and Papalambros, P. Y., "Design Preference Elicitation: Exploration and Learning", *In Proceedings of the 18th International Conference on Engineering Design*, volume 10, page 149-158, 2011.
- [6] **Ren, Y.** and Papalambros, P. Y., "Design Preference Elicitation Using Efficient Global Optimization", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2011-48316, 2011.
- [7] **Ren, Y.** and Papalambros, P. Y., "On the Use of Active Learning in Engineering Design", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2012-70624, 2012.
- [8] **Ren, Y.** and Papalambros, P. Y., "On Design Preference Elicitation with Crowd Implicit Feedback", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2012-70605, 2012.
- [9] **Ren, Y.**, Scott, C. and Papalambros, P. Y., "A Scalable Preference Elicitation Algorithm Using Group Generalized Binary Search", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2013-13059, 2013.
- [10] Burnap, A., **Ren, Y.**, Papalambros, P. Y., Gonzalez, R. and Gerth, R., "A Simulation Based Estimation of Crowd Ability and its Influence on Crowdsourced Evaluation of Design Concepts", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2013-13020, 2013.
- [11] Bayrak, A. E., **Ren, Y.**, and Papalambros, P. Y., "Optimal Design of Hybrid-Electric Vehicle Architectures Using Auto-Generation of Feasible Driving Modes", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2013-13043, 2013.
- [12] **Ren, Y.**, Burnap, A. and Papalambros, P. Y., "Quantification of Perceptual Design Attributes Using a Crowd", *In Proceedings of the 19th International Conference on Engineering Design*, 2013.
- [13] Burnap, A., **Ren, Y.**, Lee, H., Gonzalez, R. and Papalambros, P. Y., "Improving Preference Prediction Accuracy with Feature Learning", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2014-35440, 2014.
- [14] Bayrak, A. E., **Ren, Y.** and Papalambros, P. Y., "Optimal Dual-Mode Hybrid Electric Vehicle Powertrain Architecture Design for a Variety of Loading Scenarios", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2014-34897, 2014.
- [15] **Ren, Y.** and Papalambros, P. Y., "Enhanced Adaptive Choice-Based Conjoint Analysis Incorporating Engineering Knowledge", *In Proceedings of the ASME International Design Engineering Technical Conferences*, DETC2014-34790, 2014.

### **In Preparation**

- [16] Kang, N., **Ren, Y.**, Feinberg, F., and Papalambros, P. Y., "Eliciting Complex Consumer Preferences through Adaptive Questionnaires".
- [17] Bayrak, A. E., **Ren, Y.**, and Papalambros, P. Y., "Systematic Architecture Design of Dual-Mode Hybrid-electric Powertrain".
- [18] **Ren, Y.**, Scott, C. and Papalambros, P. Y., "A Scalable Preference Elicitation Algorithm Using Group Generalized Binary Search".

## Teaching

**Instructor, Design Optimization** (MAE598/494) 2015  
Arizona State University, Tempe

**Instructor, Design Optimization** (ME555) 2013, 2014  
University of Michigan, Ann Arbor

## Grants and Awards

Co-PI on NSF grant “Creativity through Collaborative Human-Machine Interactions: A Formal Approach to Design Crowd Sourcing” **\$642,574 USD** (2013)  
Outstanding Undergraduate Thesis, Tsinghua University (2007)  
National “Challenge Cup” Award, Third Prize, Tsinghua University (2006)  
Honeywell Scholarship, Tsinghua University (2004)

## Service

### Reviewing

ASME Journal of Mechanical Design  
Journal of Engineering Design  
IEEE Transactions on Vehicular Technology  
ASME International Design Engineering Technical Conference (2010-present)  
International Conference on Engineering Design (2011, 2013)  
Singapore National Research Foundation, Science of Research, Innovation and Enterprise Grant (2014)

### Program Committee

International Design Engineering Technical Conferences (2014)  
Workshop on Preference Elicitation, Design Computing and Cognition Conference (2014)

### Membership

Member of the American Society of Mechanical Engineers (2009 - present)  
Member of IEEE (2012 - present)