

Curriculum Vitae
Mahmoud Dinar, Ph.D.
Postdoctoral fellow at Georgia Institute of Technology
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Education

- Arizona State University August 2010 – July 2015
- Ph.D. Mechanical and Aerospace Engineering
 - Chair: Jami J. Shah
- Chalmers University of Technology September 2007 - May 2010
- M.S. Product Development
 - Chair: Johan Malmqvist
- K. N. Toosi University of Technology September 2001 – August 2004
- M.S. Mechanical Engineering (Manufacturing)
 - Chair: Majid Ghoreishi
- Amir Kabir University Of Technology September 1996 – August 2001
- B.S. Mechanical Engineering (Manufacturing)
 - Chair: Bijan Mollaei-Dariani
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Research

- Georgia Institute of Technology Systems Realization Laboratory/Precision Machining Research Center
- Creating an ontology for Design for Additive Manufacturing to serve a web-based aid tool and educational portal
 - Integrating as-manufactured part models with a commercial CAD software
 - Improving engineering students' understanding of advantages of subtractive and additive manufacturing in design
- Arizona State University Design Automation Laboratory
- Implementing pre-defined ontologies and text mining techniques to automate the assessment of designers input on a large scale using the web-based Problem Formulator tool
 - Developing the Problem Formulation design skill test (part IV of ASU's engineering design skill tests)
 - Implementing Problem Maps, a computational framework for investigating the relation between problem formulation and creativity in design, and finding differences among designers in adopting problem formulation strategies
 - Data collection on the Divergent Thinking test (part I of ASU's engineering design skill tests)
 - Developing measures of complexity using graph theory to predict and compare the intensiveness of developing products with different function and product structures and manufacturing processes
- Chalmers University of Technology Wingqvist laboratory
- Customizing Product Life-cycle Management tools to automate the design of an Engineering-to-order product and the development process of mechatronic products
- Amir Kabir University Of Technology
- Studying influencing factors in low pressure die casting of aluminum cylinder heads
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Refereed journal articles

- Dinar M., Rosen D., "A Design for Additive Manufacturing Ontology", *Journal of Computing and Information Science in Engineering*, (under review)
- Dinar M., Park Y-S., Shah J. J., and Langley P., "Structured, Assisted, and Measured: a Project-Based Approach to Teaching and Evaluating Conceptual Design in Engineering", *Advances in Engineering Education*, (under review)
- Dinar M., Danielescu A., Maclellan C., Shah J. J., and Langley P., 2015, "Problem Map: An ontological framework for a computational study of problem formulation in engineering design", *Journal of Computing and Information Science in Engineering*, 15(3), 031007

- Dinar M., Shah J. J., Cagan J., Leifer L., Linsey J., Smith S., Vargas-Hernandez N., 2015, "Empirical Studies of Design Thinking: Past, Present, Future", *Journal of Mechanical Design*, 137(2), 021101
 - Maclellan C., Langley P., Shah J. J., and Dinar M., 2013, "A Computational Aid for Problem Formulation in Early Conceptual Design", *Journal of Computing and Information Science in Engineering*, 13(3), 031005
 - Bergsjö D., Almfelt L., Dinar M., Malmqvist J., 2010, "Customizing Product Data Management For Systems Engineering In An Informal Lean-Influenced Organization", *Systems Research Forum*, 4(1), 101-120
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Invited book chapters

- Dinar M., Summers J., Shah J. J., Park Y.S., 2016, "Evaluation of empirical design studies and metrics", in *Experimental Design Research: Approaches, perspectives, applications*, Cash P., Stanković T., Štorga M. (Editors), Springer
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Refereed conference papers

- Rosen D., Dinar M., 2016, "A Design for Additive Manufacturing Formal Ontology for Manufacturability Analysis", *Solid Freeform Fabrication Symposium*, Austin, TX
 - Dinar M., Rosen D., 2016, "A Design for Additive Manufacturing Ontology", *Proceedings of ASME IDETC/CIE*, Charlotte, NC, USA
 - Polimera M., Dinar M., and Shah J. J., 2016, "Second Guessing – Designer Classification of Problem Definition Fragments", *Design Computing and Cognition DCC'16*, Chicago, IL., USA
 - Dinar M., Park Y., Shah J. J., Langley P., 2015, Patterns of Creative Design: Predicting Ideation from Problem Formulation, *ASME IDETC/CIE*, Boston, MA, USA
 - Dinar M., Park Y., Shah J. J., 2015, Evaluating the Effectiveness of Problem Formulation and Ideation Skills Learned Throughout an Engineering Design Course, *ASME IDETC/CIE*, Boston, MA, USA
 - Dinar M., Park Y., Shah J. J., 2015, Challenges in developing an ontology for problem formulation, *International Conference on Engineering Design (ICED15)*, Milan, Italy
 - Dinar M., Shah J. J., 2015, Towards a Comprehensive Test of Problem Formulation Skill in Design, *The 3rd International Conference on Design Creativity*, Bangalore, India
 - Dinar M., Shah J. J., 2014, Enhancing Design Problem Formulation Skills for engineering design students, *Proceedings of ASME IDETC/CIE*, Buffalo, NY, USA.
 - Cagan J., Dinar M., Shah J. J., Leifer L., Linsey J., Smith S., Vargas-Hernandez N., 2013, "Empirical Studies of Design Thinking: Past, Present, Future", *Proceedings of ASME IDETC/CIE*, Portland, OR, USA.
 - Dinar M., and Shah J. J., 2012, "A Model of Problem Formulation Strategies in Engineering Design," *Proceedings of First Annual Conference on Advances in Cognitive Systems*, P. Langley, ed., Palo Alto, CA, USA.
 - Danielescu A., Dinar M., Maclellan C., Shah J. J., and Langley P., 2012, "The Structure of Creative Design: What Problem Maps Can Tell Us about Problem Formulation and Creative Designers," *Proceedings of ASME IDETC/CIE*, Chicago, IL, USA.
 - Dinar M., Maclellan C., Danielescu A., Shah J. J., and Langley P., 2012, "Beyond Function-Behavior-Structure," *Design Computing and Cognition DCC'12*, J.S. Gero, ed., Springer, Texas A&M University, College Station, TX, USA.
 - Dinar M., Shah J. J., Langley P., Campana E., and Hunt G. R., 2011, "Towards a Formal Representation Model of Problem Formulation in Design," *Proceedings of ASME IDETC/CIE*, Washington D.C., USA.
 - Dinar M., Shah J. J., Langley P., Hunt G. R., and Campana E., 2011, "A Structure for Representing Problem Formulation in Design," *Proceedings of the International Conference on Engineering Design*, Copenhagen, Denmark.
 - Bergsjö D., Dinar M., Malmqvist J. "Customizing PDM For Systems Engineering Process", *Proceedings of the 8th Conference On Systems Engineering Research*, Hoboken, NJ, USA
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Refereed workshop papers and abstracts

- Dinar M., Shah J. J., 2016, Gamifying Evaluation of Creativity in Early Stages of Conceptual Design, *The 4th International Conference on Design Creativity*, Atlanta, GA, USA.
 - Dinar M., 2012, "Measuring design creativity with Problem Maps," *presented at Evaluation Methods for Creativity Support Environments workshop at the 2012 Design Computing and Cognition conference*, College Station, TX, USA.
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Teaching experience

Arizona State University

- Teaching assistant, Advanced Product Design, Fall 2013; gave lectures on problem formulation and artifact modeling using Modelica and SysML

- Teaching assistant, Computer Aided Engineering Lab, Spring 2010; taught Finite Elements Analysis using ANSYS
- Teaching assistant, Computer Aided Design Lab, Fall 2010; taught CAD modeling using Solidworks

MAPNA blade co.

- Instructor, April 2007; taught quality engineering tools (DOE and SPC)

Presentations

- A Design for Additive Manufacturing Ontology, IDETC/CIE conference, August 2016, Charlotte, NC
- Patterns of Creative Design: Predicting Ideation from Problem Formulation, IDETC/CIE/DTM conference, August 2015, Boston, MA
- Evaluating the Effectiveness of Problem Formulation and Ideation Skills Learned Throughout an Engineering Design Course, IIDETC/CIE/DEC conference, August 2015, Boston, MA
- Enhancing design problem formulation skills for engineering design students, IIDETC/CIE/DEC conference, August 2014, Buffalo, NY
- The structure of creative design: what problem maps can tell us about problem formulation and creative designers, IIDETC/CIE/DTM conference, August 2012, Chicago, IL
- Beyond Function-Behavior-Structure, Design Computing and Cognition conference, June 2012, Texas A&M University, College Station, TX
- Towards a formal representation model of problem formulation in design, August 2011, Washington DC
- SysML: the language of systems engineering, October 2010, Arizona State University, AZ
- Customizing a PDM systems for engineering-to-order mechatronic products, Conference on Systems Engineering Research, March 2010, Stevens Institute of Technology, Hoboken, NJ

Attended workshops

- NSF Career proposal writing workshop, August 2014, Buffalo, NY
- Writing & Designing NSF Proposals, May 2013, University of Arizona, Tucson, AZ
- Personalizing Mechatronics Education Utilizing an Open-Source Real-Time Control System Rapid Prototyping Platform, August 2013, IDETC/CIE, Portland, OR
- Product Lifecycle Management: cross industry PLM domain modeling, solution patterns and deployment case studies, August 2013, IDETC/CIE, Portland, OR
- Towards More Robust Sustainability Standards: Information Modeling Across Standard Lifecycles, August 2012, IDETC/CIE, Chicago, IL
- NSF Bio-Inspired Design Workshop: Charting a Course for Computer-Aided Bio-inspired Design Research, August 2011, IDETC/CIE, Washington DC

Awards

- 2016 ASME IDETC/CIE Best paper award in CIE/SEIKM for the paper “A Design for Additive Manufacturing Ontology”
- 2012 NSF-ASME Design essay travel award for the essay “Design and Manufacturing in 2030- The significance of Design Informatics”
- 2011 NSF-CMMI Research and Innovation Conference travel grant

Community service

- Advisory Board Member of the Seventh International Conference on Design Computing and Cognition (DCC'16)
- Conference paper reviewer, IIDETC/CIE, CIE, DEC 2015 (ASME)
- Journal paper reviewer, Journal of Manufacturing Systems (Elsevier)
- Journal paper reviewer, Research in Engineering Design (Springer)
- Journal paper reviewer, Journal of Computing and Information Science in Engineering (ASME transactions)
- Journal paper reviewer, Journal of Mechanical Design (ASME transactions)
- Conference paper reviewer, IIDETC/CIE, CIE, DAC 2014 (ASME)
- Conference paper reviewer, IIDETC/CIE, CIE, DEC 2014 (ASME)
- Conference paper reviewer, Design Computing and Cognition 2014
- Conference paper reviewer, IIDETC/CIE, CIE, DTM 2013 (ASME)
- Conference paper reviewer, Design Computing and Cognition 2012

- Founder and administrator, Repository of Design Protocols website (http://asudesign.asu.edu/protocol_repository/)
- President of the Iranian Students Association at Arizona State University (August 2011-August 2012)

Professional Membership

- American Society of Mechanical Engineers (April 2011 – present)

Internships

- Laser Cut Machining, Pars Khodro Co., Summer 1998
- CNC Machining, Pars Khodro Co., Summer 1999
- Engineering & Inspection Standards Documentation, SAICO, Spring 2001

On-Job Trainings

- Quality Tools (SPC, MSA, FMEA, APQP), United Registrar Of Systems, Jan. 2003
- SQA , Product Audit (SQFE) & Process Audit (SOGEDAC 97), Sazeh Gostar Saipa, Nov. 2003, Tehran, Iran
- MIS Seminar, VJS-Yahoo Industries, Oct 2003, Tehran, Iran
- Internal Audit Training Course For ISO/TS 16949: 02, TUV Austria, Feb. 2004, Tehran, Iran
- Cost of Quality, Industries & Scientific Services Co., May 2004, Tehran, Iran
- Strategic Management Seminar, Iran Industries Research Institute, May 2004, Tehran, Iran
- EFQM Assessor Training Course, TUV Rheinland, Dec. 2004, Tehran, Iran
- Optical Scanning, Steinbichler GmbH, Oct. 2006, Munich, Germany
- Enovia Smarteam, Semcon, May 2009, Gothenburg, Sweden

Work Experience

Production Engineer / QA Manager AICE Co., Jun. 2002-Sep. 2004

- Production process automated with pneumatic tools
- Low cost automation applied (Jidoka –mistake proofing–methods used)
- Layout improving project managed (using a developed v-lisp script for simulation)
- Quality system redesigned for ISO/TS 16949:02 requirements
- Business plan developed & SWOT analysis made
- FMEA team led, DOE planned & conducted
- Information System designed & established & software packages developed for fmea & product audit

EFQM & Lean Manufacturing team member Iran Khodro Diesel, Oct. 2004-Mar. 2005

- A database for unpacking imported goods designed for the inventory system
- Data (in the fields of leadership & strategy-policy) collected & relevant reports prepared for the submission
- Self assessment & scoring conducted with a team of assessors

Product Engineer MAPNA Blade, Sep. 2005-Aug. 2007

- Inspection programs developed for measuring gas turbine blades and vanes by CMM and optical scanner
- Production process qualification performed for blades of Siemens V94.2 gas turbine

Professional accomplishments

- Led The Company AICE Co. To Establish The Quality System ISO/TS 16949:02 & certified by German certification body DQS on May 2004
- Iran Khodro Diesel scored 309 points of the assessment done By Iran National Productivity & Business Excellence Organization
- Production of blades of Siemens V94.2 gas turbine audited and approved by Siemens Power at MAPNA Blade Co.