

Curriculum Vitae

AMIR ARMANI (GHAZANFARI)

Present Position and Contact Information

Assistant Professor of Mechanical Engineering Homepage: www.sjsu.edu/people/amir.armani
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Research Interests

- Additive Manufacturing
- Design and Optimization
- Smart Structures
- Computer-Aided Design and Manufacturing
- Functionally Graded Materials
- Sheet Metal Forming

Education

Ph.D. in Mechanical Engineering, Missouri University of Science and Technology, Aug. 2012- May. 2017

- Thesis Title: Optimal Design and Freeform Extrusion Fabrication of Functionally Gradient Smart Parts
- Advisor: Dr. Ming C. Leu

M.S. in Mechanical Engineering, Sharif University of Technology, Sep. 2009- Jan. 2012

- Thesis Title: Theoretical and Experimental Investigations of Calibration Methods and Factors Influencing the Forming Limit Diagrams
- Advisor: Dr. Ahmad Assempour

B.S. in Mechanical Engineering, Sharif University of Technology, Sep. 2005- Sep. 2009

- Thesis Title: Design of Mechanical Equipment for Pilot Project of Production of Bio-Ethanol
- Advisor: Dr. Mohsen Asghari

Academic Positions

San Jose State University, San Jose, CA; Aug. 2018- Present

Assistant Professor of Mechanical Engineering

Conducting research on Design and Optimization, Metal and Ceramic Additive Manufacturing, Failure of Brittle Materials, and Ceramic Processing. Teaching undergraduate and graduate courses: Mechanical Systems Design (F19), Finite Element Methods in Engineering (Sp19&20), Mechanical Engineering Design (F18&19, Sp19), and lab session of Design and Graphics (F18).

Arkansas Tech University, Russellville, AR; Aug. 2017- Jul. 2018

Assistant Professor of Mechanical Engineering

Conducted research on Soft Robotics and Design of Functionally Graded Materials. Taught undergraduate and graduate courses: Advanced Digital Design and Manufacturing (Sp18), Machine Component Design (F17, Sp18), and Fundamentals of Mechanical Design (F17, Sp18). Mentored Senior Design Projects.

Missouri University of Science and Technology, Rolla, MO; Aug. 2012- May 2017

Graduate Research/Teaching Assistant

Conducted research on Additive Manufacturing, Structural Ceramics, Computer-Aided Design and Manufacturing, Optimal Design, Functionally Graded Materials, and Smart Structures. Taught the lab session of Principles and Practice of Computer-Aided Design (F15).

Sharif University of Technology, Tehran, Iran; Sep. 2009- Jan. 2012

Graduate Teaching Assistant

Taught AutoCAD (F10) and Mechanical Vibrations Lab (F10&Sp11). Served as a teaching assistant for Statics (Sp11) and Metal Forming Analysis (Sp11).

Industrial Positions

Siemens Product Lifecycle Management Software Inc., Milford, OH; Summer 2016

Consultant

Authored a self-guiding tutorial for the Learning Edition of NX 10 providing a step-by-step approach to teach engineering design using this high-end software.

Sharif Satellite (funded by Iran's Space Agency), Tehran, Iran; Dec. 2009- Aug. 2012

Design Engineer of Attitude Determination and Control Group

Studied and selected all sensors and actuators. Designed the configuration of Sun Sensors. Designed a Reaction Wheel. Designed and fabricated a 3 DOF gimballed simulator and a 3 DOF air-bearing simulator. Participated in the development of attitude determination algorithms. Participated in the Product Assurance group. Supervised the test subgroup. Supervised the Hardware-in-the-Loop subgroup.

Research Consortium for Design and Building a Pilot Unit for Production of Bio-Ethanol from Bagasse (funded by Iran's Ministry of Industries and Mines), Tehran, Iran; Jan. 2009- Jan. 2011

Design Engineer of Mechanical Design Group

Designed 30+ tanks, pressure vessels and fermenters. Designed 3 distillation towers and their cartridge trays. Prepared datasheets of 25 different pumps.

Petrochemical Industries Equipment Design and Manufacturing Company, Karaj, Iran; Summer 2009

Intern

Studied the design and manufacturing processes of pressure vessels and heat exchangers.

Iran Khodro Automobile Manufacturing Company, Karaj, Iran; Summer 2007

Intern

Studied dynamical test of automobiles and proposed solutions for improving the test methods. Studied the design, manufacturing and assembling processes of automobile components.

Honors and Awards

- Inaugural College of Engineering and Computing Dean's Ph.D. Scholar Award, 2017
- Best Student Paper Award, ASME Symposium on Integrated Systems Design and Implementation, 2016
- 2nd Best Paper Award, Intelligent Systems Center Research Symposium, 2015
- 2nd Best Poster Award, Tenth Annual Intelligent Systems Center Poster Presentation, 2014
- Vice-Provost for Graduate Studies Scholars Fellowship, 2012

Patent

"Method and Apparatus for Fabricating Ceramic and Metal Components via Additive Manufacturing with Uniform Layered Radiation Drying," M.C. Leu, A. Ghazanfari, W. Li, G.E. Hilmas, and R.G. Landers, U.S. Patent No. 10,259,158 B2, Granted April 16, 2019.

Books

1. “NX 12 for Engineering Design,” M.C. Leu, W. Tao, A. Ghazanfari, and K. Kolan, Department of Mechanical and Aerospace Engineering, Missouri University of Science and Technology, 2018.
2. “NX 10 for Engineering Design,” M.C. Leu, A. Ghazanfari, and K. Kolan, Department of Mechanical and Aerospace Engineering, Missouri University of Science and Technology, 2016.

Journal Papers

1. “Characterization of zirconia specimens fabricated by ceramic on-demand extrusion,” W. Li, A. Ghazanfari, D. McMillen, M.C. Leu, G.E. Hilmas, and J.L. Watts, *Ceramics International* 44, pp. 12245-12252, 2018.
2. “A Novel Freeform Extrusion Fabrication Process for Producing Solid Ceramic Components with Uniform Layered Radiation Drying,” A. Ghazanfari, W. Li, M.C. Leu, and G.E. Hilmas, *Additive Manufacturing Journal* 15, pp. 102-112, 2017.
3. “Mechanical Characterization of Parts Produced by Ceramic On-Demand Extrusion Process,” A. Ghazanfari, W. Li, M.C. Leu, J.L. Watts, and G.E. Hilmas, *International Journal of Applied Ceramic Technology* 14, pp. 486-494, 2017.
4. “Additive Manufacturing and Mechanical Characterization of High Density Fully Stabilized Zirconia,” A. Ghazanfari, W. Li, M.C. Leu, J.L. Watts, and G.E. Hilmas, *Ceramics International* 43, pp. 6082-6088, 2017.
5. “Fabricating Ceramic Components with Dissolvable Support Structures by Ceramic On-Demand Extrusion Process,” W. Li, A. Ghazanfari, D. McMillen, M.C. Leu, and G.E. Hilmas, *CIRP Annals – Manufacturing Technology* 66, pp. 225-228, 2017.
6. “Extrusion-On-Demand Methods for High Solids Loading Ceramic Paste in Freeform Extrusion Fabrication,” W. Li, A. Ghazanfari, M.C. Leu, and R.G. Landers, *Virtual and Physical Prototyping* 12, pp. 193-205, 2017.
7. “Advanced Ceramic Components with Embedded Sapphire Optical Fiber Sensors for High Temperature Applications,” A. Ghazanfari, W. Li, M.C. Leu, Y. Zhuang, and J. Huang, *Materials and Design* 112, pp. 197-206, 2016.
8. “Modeling and Analysis of Paste Freezing in Freeze-Form Extrusion Fabrication of Thin-Wall Parts via a Lumped Method,” M. Li, A. Ghazanfari, W. Li, R.G. Landers, and M.C. Leu, *Journal of Materials Processing Technology* 237, pp. 163-180, 2016.
9. “Adaptive Rastering Algorithm for Freeform Extrusion Fabrication Processes,” A. Ghazanfari, W. Li, and M.C. Leu, *Virtual and Physical Prototyping* 10, pp. 163-172, 2015.
10. “The Effect of the Imposed Boundary Rate on the Formability of Strain Rate Sensitive Sheets Using the MK Method,” R. Hashemi, A. Ghazanfari, K. Abrinia, and A. Assempour, *Journal of Materials Engineering and Performance* 22, pp. 2522-2527, 2013.
11. “Loading Path Determination for Tube Hydroforming Process of Automotive Component Using APDL,” E.M. Khalil Abad, A. Ghazanfari, and R. Hashemi, *International Journal of Automotive Engineering* 3, pp. 555-563, 2013.
12. “Calibration of Forming Limit Diagrams Using a Modified Marciniak-Kuczynski Model and an Empirical Law,” A. Ghazanfari and A. Assempour, *Materials and Design* 34, pp. 185-191, 2012.

13. "A New Calibration Method for FLCs in the M-K Frame-Work," A. Ghazanfari and A. Assempour, *Advanced Materials Research* 341, pp. 426-431, 2012.
14. "Forming Limit Diagrams of Ground St14 Steel Sheets with Different Thicknesses," R. Hashemi, A. Ghazanfari, K. Abrinia, and A. Assempour, *SAE International Journal of Materials and Manufacturing* 5, pp. 60-64, 2012.

Peer-Reviewed Conference Papers

1. "Fabricating Zirconia Parts with Organic Support Material by the Ceramic On-Demand Extrusion Process," W. Li, A. Ghazanfari, D. McMillen, A. Scherff, M.C. Leu, and G.E. Hilmas, *Solid Freeform Fabrication Symposium*, Austin, TX, 2017.
2. "A Novel Extrusion-Based Additive Manufacturing Process for Ceramic Parts," A. Ghazanfari, W. Li, M.C. Leu, and G.E. Hilmas, *Solid Freeform Fabrication Symposium*, Austin, TX, 2016.
3. "Properties of Partially Stabilized Zirconia Components Fabricated by the Ceramic On-Demand Extrusion Process," W. Li, A. Ghazanfari, D. McMillen, M.C. Leu, G.E. Hilmas, and J.L. Watts, *Solid Freeform Fabrication Symposium*, Austin, TX, 2016.
4. "Freeform Extrusion Fabrication of Advanced Ceramic Components with Embedded Sapphire Optical Fiber Sensors," A. Ghazanfari, W. Li, M.C. Leu, J.L. Watts, Y. Zhuang, and J. Huang, *ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)*, Stowe, VT, 2016.
5. "Planning Freeform Extrusion Fabrication Processes with Consideration of Horizontal Staircase Effect," A. Ghazanfari, W. Li, M.C. Leu, and R.G. Landers, *Solid Freeform Fabrication Symposium*, Austin, TX, 2015.
6. "Optimal Rastering Orientation in Freeform Extrusion Fabrication Processes," A. Ghazanfari, W. Li, M.C. Leu, and R.G. Landers, *Solid Freeform Fabrication Symposium*, Austin, TX, 2015.
7. "Methods of Extrusion On Demand for High Solids Loading Ceramic Paste in Freeform Extrusion Fabrication," W. Li, A. Ghazanfari, M.C. Leu, and R.G. Landers, *Solid Freeform Fabrication Symposium*, Austin, TX, 2015.
8. "Composition Optimization for Functionally Gradient Parts Considering Manufacturing Constraints," A. Ghazanfari and M. C. Leu, *Proceedings of the ASME 2014 Manufacturing Science and Engineering Conference (MSEC 2014)*, Detroit, MI, 2014.
9. "A Critical Assessment of Forming Limit Prediction Models and Beneficial Modifications to Them," A. Ghazanfari and A. Assempour, *SAE World Congress*, Detroit, MI, 2012.
10. "Forming Limit Diagrams of Ground St14 Steel Sheets with Different Thicknesses," R. Hashemi, A. Ghazanfari, K. Abrinia, and A. Assempour, *SAE World Congress*, Detroit, MI, 2012.
11. "Determination of Geometrical Parameters of the Dead Metal Zone in the Extrusion Process of Non-Symmetrical Dies Using the Upper Bound Method," M. Rastegar, A. Assempour, and A. Ghazanfari, *SAE World Congress*, Detroit, MI, 2012.
12. "A Theoretical Study on the Effect of Strain Rate on Forming Limit Diagrams," A. Assempour and A. Ghazanfari, *3rd International Conference on Manufacturing Engineering (ICME2011)*, Tehran, Iran, 2011.

13. "Effect of Manufacturing Processes on Formability of Steel Sheets," A. Ghazanfari A, R. Hashemi, A. Assempour, K. Abrinia, and A. Akbarzadeh, 3rd International Conference on Manufacturing Engineering (ICME2011), Tehran, Iran, 2011.
14. "Prediction of the Dead Metal Zone Profile in the Extrusion Process of Flat Dies Using Energy Minimization Method," M. Rastegar, A. Assempour, and A. Ghazanfari, 3rd International Conference on Manufacturing Engineering (ICME2011), Tehran, Iran, 2011.
15. "A New Calibration Method for FLCs in the M-K Frame-Work," A. Ghazanfari A and A. Assempour, International Conference on Material and Manufacturing Technology (ICMMT 2011), Xiamen, China, 2011.
16. "A Modified NADDRG Relation for Prediction of the Limiting Strains," A. Assempour and A. Ghazanfari, 5th National Conference of Metals and Materials Forming, Tehran, Iran, 2011.

Invited Talks

1. "Free-From Fabrication: From Freezing to Firing," University of California, Merced, 2018.
2. "Finite Element Analysis and Topology Optimization Using NX," Student Section of American Society of Mechanical Engineers, Missouri University of Science and Technology, 2016.

Grants

1. "Bioinspired Design of a Soft Robot Hand using Fluidic Elastomer Materials," awarded by **NIH** INBRE, \$55,000, 2018 (PI: T. Ashuri, Co-PI: A. Ghazanfari).
2. "Optimal Design of Functionally Graded Spacecraft Components for Additive Manufacturing," awarded by **NASA** ASGC, \$5,000, 2018 (PI: A. Ghazanfari, Co-PIs: T. Ashuri, and B. Chehroudi).