Curriculum Vitae of Amir Mohammadi Nasab

Contact Information

Yale University
Department of Mechanical Engineering and Materials Science
New haven, CT 06511
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Research Interests

Solid Mechanics: Adhesion Mechanics, Architectured Materials, and Mechanical Instability of Thin Structures.

Materials Engineering: Multifunctional Composite Materials, and Biomimetic Materials.

Thermal Science: Thermal Analysis and Thermoeconomic Optimization.

Soft Robotics: Actuation, Sensing, Mechanisms, and Materials, using fundamental insights from the above.

Education

University of Nevada, Reno (UNR), NV, USA

- Ph.D., Department of Mechanical Engineering — Fall 2014 - Spring 2019
- GPA: 4.0/4.0
- Advisor: Dr. Wanliang Shan (Now at Syracuse University)
- Research and Teaching Assistant — Fall 2014 - Spring 2019
- Lab Manager at Shan Research Group (SRG) — May 2018 - May 2019
- Thesis: Integrating Smart Materials and Adhesion Mechanics for Soft Gripping Mechanisms

Iran University of Science and Technology (IUST), Tehran, Tehran, Iran

- M.S., Department of Mechanical Engineering — 2007 - 2010
- Thesis: Modeling and optimizing a CHP system for a natural gas pressure reduction plant
- Genetic algorithm was implemented for Thermoeconomic optimization of a CHP system

Amirkabir University of Technology (AUT), Tehran, Tehran, Iran

- B.S., Department of Aerospace Engineering — 2003 - 2007

Appointment Held

Postdoctoral Associate — Sep. 2019 - Present

- Department of Mechanical Engineering and Material Science, Yale University, The Faboratory, New haven, CT, USA
- Advisor: Dr. Rebecca Kramer-Bottiglio
- Designed a highly stretchable multiphase composite with uniform conductivity
- Designed a variable stiffness, electrically conductive, and highly stretchable composite for soft robots
- Designed elastomer grain actuators with conductive coating

Instructor — Summer 2019

- Department of Mechanical Engineering, University of Nevada, Reno, NV, USA

Peer Reviewed Publications

Reverse Chronological Order; ° Co-first Author; * Corresponding Author.

[17] S. Sharifi, **A. Mohammadi Nasab**, P. Chen, Y. Liao, Y. Jiao, and W.L. Shan*, *Robust Biocontinuous Metal-Elastomer Foam Composite with Highly Tunable Mechanical Stiffness for Soft Robotics*, **Advanced Engineering Materials** 2021. (Submitted)

[16] **A. Mohammadi Nasab**, P. Stampfli, S. Sharifi, A. Luo, K.T. Turner, and W.L. Shan*, *Dynamically Tunable Dry Adhesion Through a Subsurface Thin Layer with Tunable Stiffness*, **Advanced Materials Interfaces** 2021. (In press.)

[15] **A. Mohammadi Nasab**, T.L. Buckner, B. Yang, and R. Kramer-Bottiglio*, *Effect of Filler Aspect Ratio on Stiffness and Conductivity in Phase-Changing Particulate Composites*, **Advanced Materials Technologies**

2021: 2100920. Link

[14] S. Kriegman, **A. Mohammadi Nasab**, D. Blackiston, H. Steele, M. Levin, R. Kramer-Bottiglio, J. Bongard, *Scale invariant robot behavior with fractals*, **IEEE RAS International Conference on Soft Robotics (RoboSoft)** 2021. Link

[13] S. Sharifi, C. Rux, N. Sparling, G. Wan, **A. Mohammadi Nasab**, A. Siddaiah, P. Menezes, T. Zhang, and W. Shan*. *Dynamically Tunable Friction via Subsurface Stiffness Modulation*, **Frontiers in Robotics and AI**, 2021, 8, 191. Link

[12] **A. Mohammadi Nasab**, S. Sharifi, S. Chen, Y. Jiao, and W.L. Shan*, *Robust three-component elastomer-particle-fiber composites with tunable properties for soft robotics*, **Advanced Intelligent Systems** 2020: 2000166. Link

[11] A. Luo°, **A. Mohammadi Nasab**°, M. Tatari, S. Chen, W.L. Shan*, and K.T. Turner*, *Adhesion of flat-ended pillars with non-circular contacts*, **Soft Matter** 2020, 16 (41), 9534-9542. Link

[10] **A. Mohammadi Nasab**°, A. Luo°, S. Sharifi, K.T. Turner*, and W.L. Shan*, *Switchable Adhesion via Subsurface Pressure Modulation*, **ACS Applied Materials & Interfaces** 2020, 12 (24), 27717-27725. Link

[9] R. A. Bilodeau°, **A. Mohammadi Nasab**°, D. S. Shah, and R. Kramer-Bottiglio*, *Uniform Conductivity in Stretchable Silicones via Multiphase Inclusions*, **Soft Matter** 2020, 16 (25), 5827-5839.Link

[8] S. Kriegman, **A. Mohammadi Nasab**, D. Shah, H. Steele, G. Branin, M. Levin, J. Bongard, R. Kramer-Bottiglio, *Scalable sim-to-real transfer of soft robot designs*, **IEEE RAS International Conference on Soft Robotics (RoboSoft)** 2020. Link

[7] X. Huang, K. Kumar, M. K. Jawed, **A. Mohammadi Nasab**, Z. Ye, W. Shan, and C. Majidi*, *Highly Dynamic Shape Memory Alloy Actuator for Fast Moving Soft Robots*, **Advanced Materials Technologies** 2019: 1800540. Link

[6] X. Huang, K. Kumar, M. K. Jawed, **A. Mohammadi Nasab**, Z. Ye, W. Shan, and C. Majidi*, *Chasing Biomimetic Locomotion Speeds: Creating Untethered Soft Robots with Shape Memory Alloy Actuators*, **Science Robotics** 2018, 3 (25), 7557. Link

[5] D. Wang, N. Hu, S. Huang, **A. Mohammadi Nasab**, K. Yang, M. C. Abate, X. Yu, L. Tan, W.L. Shan, and Z. Chen*, *Buckling and post-buckling of an elastic rod embedded in a bilayer matrix*, **Extreme Mechanics Letters** 2018, 25, 1–6. Link

[4] M. Tatari, **A. Mohammadi Nasab**, K.T. Turner*, W.L. Shan*, *Dynamically Tunable Dry Adhesion via Subsurface Stiffness Modulation*, **Advanced Materials Interfaces** 2018, 5 (18), 1800321. Link

[3] **A. Mohammadi Nasab**°, A. Sabzehzar°, M. Tatari, C. Majidi, and W.L. Shan*, *A Soft Gripper with Rigidity Tunable Elastomer Strips as Ligaments*, **Soft Robotics** 2017, 4 (4), 411–420. Link

[2] **A. Mohammadi Nasab**, D. Wang, Z. Chen, and W.L. Shan*, *Buckling shape transition of an embedded thin elastic rod after failure of surrounding elastic medium*, **Extreme Mechanics Letters** 2017, 15, 51-56. Link

[1] S. Sanaye*, and **A. Mohammadi Nasab**, *Modeling and optimizing a CHP system for natural gas pressure reduction plant*, **Energy** 2012, 40 (1), 358–369. Link

Presentations

Conference Talks:

[4] International Mechanical Engineering Congress and Exposition (IMECE), Pittsburgh, Pennsylvania, USA 2018.

[3] International Mechanical Engineering Congress and Exposition (IMECE), Tampa, Florida, USA 2017.

[2] International Mechanical Engineering Congress and Exposition (IMECE), Phoenix, Arizona, USA 2016.

[1] The 53rd Annual Technical Meeting of the Society of Engineering Science (SES), College Park, Maryland, USA 2016.

Poster Presentations:

[1] Gordon Research Conference on Adhesion Science of, South Hadley, Massachusetts, USA 2016.

Teaching

Instructor for "**System Analysis and Design (ME310)**", UNR.	Summer 2019
Instructor for "**Introduction to Robotics (ME422/622)**", UNR.	Spring 2018
Assistant of Instruction for "**Introduction to Robotics (ME422/622)**", UNR.	2014- 2016
Assistant of Instruction for "**Introduction to Mechanical Engineering II (ME151)**", UNR.	Fall 2016
Substitute instructor for "**Continuum Mechanics (ME720)**", UNR.	Spring 2016

Honors and Awards

Graduate Dean's Merit Scholarship, UNR.	2017-2018
Outstanding International Graduate Student Award, UNR.	2016-2017 and 2017-2018
International Graduate Student Scholarship, UNR.	2016-2017
Douglas Bevans Mechanical Engineering Scholarship, UNR.	2015-2016

Professional Affiliations and Services

Reviewer:

Journal of Soft Robotics, Journal of Frontiers in Robotics and AI Soft Robotics, IEEE International Conference on Robotics and Automation (ICRA), International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Soft Robotics (RoboSoft), and IEEE Transaction on Robotics (T-RO).

Memberships and Services:

American Society of Mechanical Engineers (ASME), Student Membership.	2016-2019
Society for the Advancement of Material and Process Engineering (SAMPE), Student Membership.	2017-2018
Materials Research Society (MRS), Student Membership.	2019-2020

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