Junliang 'Julian' TAO

Curriculum Vitae

January 2023

School of Sustainable Engineering and the Built Environment
Center for Bio-mediated and Bio-inspired Geotechnics
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Education and Qualifications

2013	Ph.D.	Case Western Reserve University	Cleveland, USA
2009	M.S.	Tongji University	Shanghai, China
2006	B.S.	China University of Geosciences	Wuhan, China

Positions Held

2018–	**Associate Professor**	School of Sustainable Engineering and the Built Environment, Center for Bio-mediated and Bio-inspired Geotechnics, Arizona State University
2022/12–2022/12	**Guest Professor**	Institute of Geotechnical Engineering, University of Natural Resources and Life Sciences (BOKU) Vienna, Austria
2013–2018	**Assistant Professor**	Department of Civil Engineering, The University of Akron
2009–2013	**Research Assistant**	Department of Civil Engineering, Case Western Reserve University
2006–2009	**Research Assistant**	Department of Geotechnical Engineering, Tongji University

Areas of Expertise

- **Research**
  - Bio-inspired Geotechnics
  - Bio-inspired Self-burrowing Mechanisms and Robots
  - Bio-inspired Underground Communication
  - Bio-inspired Erosion and Scour Countermeasures
  - Bio-inspired Sensors
  - Soil behavior and soil mechanics
- **Teaching**
  - Soil Mechanics
  - Soil Behavior
  - Bio-inspired Design
  - Foundation Engineering

Professional Licensure

Engineer-In-Training (EIT), State of Michigan, Since 2010

Professional Membership

Associate Member	American Society of Civil Engineers (ASCE) Geo-Institute
Member	Institute of Electrical and Electronics Engineers (IEEE)
Member	International Association of Chinese Infrastructure Professionals (IACIP)
Member	International Society for Optical Engineering (SPIE)
Member	International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)
Member	Society for Integrative and Comparative Biology (SICB)
Member	Transportation Research Board (TRB)

Honors and Awards

2020	The 10th Anniversary Excellent Paper Award by the Journal of Rock Mechanics and Geotechnical Engineering
2017	NSF CAREER Award
2017	Gary W. Johnson Young Civil Engineer of the Year Award (ASCE Akron-Canton Section)
2017	Excellent Paper Award, The 2017 International Conference on Transportation Infrastructure and Materials
2017	Keynote Speaker, The 2nd Transportation Research Congress, Beijing, China
2016	Summer Faculty Fellowship (University of Akron)
2015	Highlight paper, IFCEE 2015
2014	Biomimicry Research and Innovation Center Research Incentive Grant (University of Akron)
2014	ExCEED 2014 Teaching Fellow (ASCE)
2013	Geo-institute Travel Award, Geo-congress 2013 (ASCE)
2013	Roy Harley Prize (Case Western Reserve University)
2012	Highlight paper, Smart Materials and Structures
2012	USUCGER Travel Award, 1st USUCGER Early Career Geotechnical Conference and NSF CMMI Research and Innovation Conference (USUCGER, NSF)
2012	Craig J. Miller Memorial Award (Case Western Reserve University)
2011	SGS-Graduate Student Travel Award for International Workshop on Structural Health Monitoring 2011 (Case Western Reserve University)
2002-2009	Various outstanding student awards during bachelor and master studies in China, including the prestigious State Fellowship of China.

PUBLICATIONS, INTELLECTUAL PROPERTY AND PRESENTATIONS

SUMMARY OF PUBLICATIONS AND INTELLECTUAL PROPERTY

Abstract published in conference proceedings	9
Books Co-Edited	3
Invited Journal Publications	1
Invited Conference Papers	3
Refereed Conference Papers	57
Technical Reports or other papers (non-refereed)	6
Total Journal Publications (Published, In Press, and/or Accepted)	38
Journal publications from ASU	13
Journal Publications Prior to ASU (All Published)	25
Manuscripts Submitted / In Revision from ASU	2
Manuscripts in Preparation from ASU (to be submitted before 06/31/2023)	5
Intellectual Property from ASU: Patents; Patents pending	2

SUMMARY OF PRESENTATIONS

Invited Presentations — External	20
Invited Presentations — ASU Internal	2
Invited Conference Presentations, including students	44
Peer-reviewed Conference Presentations, including students	42
Non-refereed Conference Presentations	2

Publications

Legends:

(*)	Corresponding Author
Bold Font	Ph.D. Student for whom I am the primary advisor
Bold Italic Font	Ph.D. Student for whom I am a co-advisor
Underline Font	Master's Student for whom I am the primary advisor or a co-advisor
($^{\#}$)	Undergraduate Student
($^{\infty}$)	Other/Visiting Student
($^{\times}$)	Postdoctoral Researcher
(‡)	High School Student
($^{+}$)	Equal Contributions
($^{\sim}$)	Presenting Author

Journal Articles (Peer reviewed)

1. **X Li**, L van Paassen, and J Tao*. Investigation of Using Mangrove-Inspired Skirt Pile Group as a Scour Countermeasure. *Ocean Engineering* **266** (2022), 113133. ISSN: 0029-8018. DOI: 10.1016/j.oceaneng.2022.113133.
2. A Martinez*, J Dejong, I Akin, A Aleali, C Arson, J Atkinson, P Bandini, T Baser, R Borela, R Boulanger, M Burrall, Y Chen, C Collins, D Cortes, S Dai, T DeJong, E Del Dottore, K Dorgan, R Fragaszy, JD Frost, R Full, M Ghayoomi, DI Goldman, N Gravish, IL Guzman, J Hambleton, E Hawkes, M Helms, D Hu, L Huang, **S Huang**, C Hunt, D Irschick, HT Lin, B Lingwall, A Marr, B Mazzolai, B McInroe, T Murthy, K O'Hara, M Porter, S Sadek, M Sanchez, C Santamarina, L Shao, J Sharp, H Stuart, HH Stutz, A Summers, **J Tao**, M Tolley, L Treers, K Turnbull, R Valdes, L van Paassen, G Viggiani, D Wilson, W Wu, X Yu, and J Zheng. Bio-Inspired Geotechnical Engineering: Principles, Current Work, Opportunities and Challenges. *Géotechnique* **72**(8) (2022), 687–705. ISSN: 0016-8505. DOI: 10.1680/jgeot.20.P.170.
3. **Y Tang** and J Tao*. Multiscale Analysis of Rotational Penetration in Shallow Dry Sand and Implications for Self-Burrowing Robot Design. *Acta Geotechnica* (2022). ISSN: 1861-1125, 1861-1133. DOI: 10.1007/s11440-022-01492-x.
4. C Wang*, Y Yuan, F Liang, and J Tao. Experimental Investigation of Local Scour around Cylindrical Pile Foundations in a Double-Layered Sediment under Current Flow. *Ocean Engineering* **251** (2022), 111084. ISSN: 0029-8018. DOI: 10.1016/j.oceaneng.2022.111084.
5. **Y Zhong** and J Tao*. Bio-Inspired Vibrational Wireless Underground Communication System. *Journal of Rock Mechanics and Geotechnical Engineering* (2022). ISSN: 1674-7755. DOI: 10.1016/j.jrmge.2022.06.005.
6. D Li, **S Huang**, **Y Tang**, J Tao, H Marvi, and DM Aukes*. Compliant Fins for Locomotion in Granular Media. *IEEE Robotics and Automation Letters* (2021). In Press.
7. J Tao. Burrowing Soft Robots Break New Ground. *Science Robotics* **6**(55) (2021). ISSN: 2470-9476. DOI: 10.1126/scirobotics.abj3615.
8. **S Huang**, **Y Tang**, H Bagheri, D Li, A Ardente#, D Aukes, H Marvi, and J Tao*. Effects of Friction Anisotropy on Upward Burrowing Behavior of Soft Robots in Granular Materials. *Advanced Intelligent Systems* **2**(6) (2020), 1900183. ISSN: 2640-4567. DOI: 10.1002/aisy.201900183.
9. **S Huang** and J Tao*. Modeling Clam-Inspired Burrowing in Dry Sand Using Cavity Expansion Theory and DEM. *Acta Geotechnica* **15**(8) (2020), 2305–2326. ISSN: 1861-1125, 1861-1133. DOI: 10.1007/s11440-020-00918-8.
10. H Li∞, J Tao*, L Wei, and Y Liu. Explosive Compaction Technology for Loess Embankment Settlement Control: Numerical Simulation and Field Implementation. *Acta Geotechnica* **15**(4) (2020), 975–997. ISSN: 1861-1133. DOI: 10.1007/s11440-019-00777-y.
11. J Tao*, **S Huang**, and **Y Tang**. SBOR: A Minimalistic Soft Self-Burrowing-out Robot Inspired by Razor Clams. *Bioinspiration & Biomimetics* **15**(5) (2020), 055003. ISSN: 1748-3190. DOI: 10.1088/1748-3190/ab8754.

12. J Tao*, **S Huang**, and **Y Tang**. Bioinspired Self-Burrowing-Out Robot in Dry Sand. *Journal of Geotechnical and Geoenvironmental Engineering* **145**(12) (2019), 02819002. ISSN: 1090-0241, 1943-5606. DOI: 10.1061/(ASCE)GT.1943-5606.0002177.
13. X Wang× and J Tao*. Polymer-Modified Microbially Induced Carbonate Precipitation for One-Shot Targeted and Localized Soil Improvement. *Acta Geotechnica* **14**(3) (2019), 657–671. ISSN: 1861-1133. DOI: 10.1007/s11440-018-0757-z.
14. B Zhang*, Hx Wang, Yw Ye, J Tao, Lz Zhang, and L Shi. Potential Hazards to a Tunnel Caused by Adjacent Reservoir Impoundment. *Bulletin of Engineering Geology and the Environment* **78**(1) (2019), 397–415. ISSN: 1435-9537. DOI: 10.1007/s10064-017-1110-8.
15. **J Li** and J Tao*. CFD-DEM Two-Way Coupled Numerical Simulation of Bridge Local Scour Behavior under Clear-Water Conditions. *Transportation Research Record* **2672**(39) (2018), 107–117. ISSN: 0361-1981. DOI: 10.1177/0361198118783170.
16. J Tao*, **J Li**, X Wang×, and R Bao. Nature-Inspired Bridge Scour Countermeasures: Streamlining and Biocementation. *Journal of Testing and Evaluation* **46**(4) (2018), 1376–1390. ISSN: 0090-3973. DOI: 10.1520/JTE20170517.
17. X Wang×, J Tao*, R Bao, T Tran, and S Tucker-Kulesza. Surficial Soil Stabilization against Water-Induced Erosion Using Polymer-Modified Microbially Induced Carbonate Precipitation. *Journal of Materials in Civil Engineering* **30** (2018). DOI: 10.1061/(ASCE)MT.1943-5533.0002490.
18. R Bao, **J Li**, L Li, TJ Cutright, L Chen, J Zhu, and J Tao*. Effect of Microbial-Induced Calcite Precipitation on Surface Erosion and Scour of Granular Soils: Proof of Concept. *Transportation Research Record* **2657**(1) (2017), 10–18. ISSN: 0361-1981. DOI: 10.3141/2657-02.
19. **J Li**, J Tao*, and Y Liu. DES Modeling of Erosional Forces around Streamlined Piers and Implications for Scour Countermeasures. *International Journal of Geomechanics* **17**(6) (2017), 04016139. ISSN: 1943-5622. DOI: 10.1061/(ASCE)GM.1943-5622.0000839.
20. X Sun, J Tao, J Li, Q Dai*, and X Yu. Aeroelastic-aerodynamic analysis and bio-inspired flow sensor design for boundary layer velocity profiles of wind turbine blades with active external flaps. *Smart Structures and Systems* **20**(3) (2017), 311–328. ISSN: 1738-1584. DOI: 10.12989/sss.2017.20.3.311.
21. **H Tao** and J Tao*. Quantitative Analysis of Piping Erosion Micro-Mechanisms with Coupled CFD and DEM Method. *Acta Geotechnica* **12**(3) (2017), 573–592. ISSN: 1861-1133. DOI: 10.1007/s11440-016-0516-y.
22. J Tao* and **H Tao**. Factors Affecting Piping Erosion Resistance: Revisited with a Numerical Modeling Approach. *International Journal of Geomechanics* **17**(11) (2017), 04017097. DOI: 10.1061/(ASCE)GM.1943-5622.0000999.
23. J Tao* and J Hu. Energy Harvesting from Pavement via Polyvinylidene Fluoride: Hybrid Piezo-Pyroelectric Effects. *Journal of Zhejiang University-SCIENCE A* **17**(7) (2016), 502–511. ISSN: 1862-1775. DOI: 10.1631/jzus.A1600166.
24. J Tao and X Yu*. Bio-Inspired Directional Sensor with Piezoelectric Microfiber and Helical Electrodes. *Journal of Intelligent Material Systems and Structures* **27**(13) (2016), 1755–1766. ISSN: 1045-389X. DOI: 10.1177/1045389X15610904.

25. Q Gao, J Tao, J Hu, and X Yu*. Laboratory Study on the Mechanical Behaviors of an Anisotropic Shale Rock. *Journal of Rock Mechanics and Geotechnical Engineering* **7**(2) (2015), 213–219. ISSN: 1674-7755. DOI: 10.1016/j.jrmge.2015.03.003.
26. **J Li** and J Tao*. Streamlining of Bridge Piers as Scour Countermeasures: Optimization of Cross Sections. *Transportation Research Record* **2521**(1) (2015), 162–171. ISSN: 0361-1981. DOI: 10.3141/2521-17.
27. J Tao* and **J Li**. Streamlining of Bridge Piers as Scour Countermeasures: Effects of Curvature of Vertical Profiles. *Transportation Research Record* **2521**(1) (2015), 172–182. ISSN: 0361-1981. DOI: 10.3141/2521-18.
28. B Zhang*, L Zhang, H Yang, Z Zhang, and J Tao. Subsidence Prediction and Susceptibility Zonation for Collapse above Goaf with Thick Alluvial Cover: A Case Study of the Yongcheng Coalfield, Henan Province, China. *Bulletin of Engineering Geology and the Environment* **75** (2015). DOI: 10.1007/s10064-015-0834-6.
29. R Wang*, J Tao, B Yu, and L Dai. Characterization of Multiwalled Carbon Nanotube-Polymethyl Methacrylate Composite Resins as Denture Base Materials. *The Journal of Prosthetic Dentistry* **111**(4) (2014), 318–326. ISSN: 00223913. DOI: 10.1016/j.prosdent.2013.07.017.
30. JY Hu, BX Yu*, and J Tao. Innovative Chromogenic Materials for Pavement Life Extension: Modeling Study of Surface Temperature of Sustainable Asphalt Pavement. *International Journal of Pavement Research and Technology* **6**(2) (2013). DOI: 10.6135/ijprt.org.tw/2013.6(2).141.
31. Z Liu, B Zhang, X Yu*, J Tao, Y Sun, and Q Gao. Thermally Induced Water Flux in Soils. *Transportation Research Record* **2349**(1) (2013), 63–71. ISSN: 0361-1981. DOI: 10.3141/2349-08.
32. Y Sun, CY Chung, X Yu*, Z Liu, and J Tao. Advanced Ultrasonic Technology for Air Void Distribution in Concrete. *Materials Evaluation* **71**(3) (2013). ISSN: 00255327.
33. Y Sun, X Yu*, Z Liu, Y Liu, and J Tao. Advanced Ultrasonic Technology for Freezing Damage Prevention of Concrete Pavement. *International Journal of Pavement Research and Technology* **6**(2) (2013). DOI: 10.6135/ijprt.org.tw/2013.6(2).86.
34. J Tao, Y Sun, G Wu, and X Yu*. Emulating the Directional Sensitivity of Fish Hair Cell Sensor. *Journal of Intelligent Material Systems and Structures* **24**(12) (2013), 1484–1493. ISSN: 1045-389X, 1530-8138. DOI: 10.1177/1045389X12473378.
35. X Yu, B Zhang, J Tao, and X Yu*. A New Time-Domain Reflectometry Bridge Scour Sensor. *Structural Health Monitoring* **12**(2) (2013), 99–113. ISSN: 1475-9217. DOI: 10.1177/1475921713476331.
36. Z Liu, XB Yu*, J Tao, and Y Sun. Multiphysics Extension to Physically Based Analyses of Pipes with Emphasis on Frost Actions. *Journal of Zhejiang University SCIENCE A* **13**(11) (2012), 877–887. ISSN: 1862-1775. DOI: 10.1631/jzus.A12ISGT2.
37. Z Liu, B Zhang, X Yu*, and J Tao. A New Method for Soil Water Characteristic Curve Measurement Based on Similarities Between Soil Freezing and Drying. *Geotechnical Testing Journal* **35**(1) (2012), 2–10. ISSN: 0149-6115. DOI: 10.1520/GTJ103653.

38. J Tao and X Yu*. Hair Flow Sensors: From Bio-Inspiration to Bio-Mimicking—a Review. *Smart Materials and Structures* **21**(11) (2012), 113001. ISSN: 0964-1726. DOI: 10.1088/0964-1726/21/11/113001.

Conference Papers (Peer reviewed)

39. S Huang×, N Mahabadi, and J Tao*. Penetration and Relaxation in Dry Granular Materials: Insights from Photoelasticity. In: Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.130–139. ISBN: 978-0-7844-8404-3. DOI: 10.1061/9780784484043.013.
40. S Huang× and J Tao*. Bioinspired Horizontal Self-Burrowing Robot. In: Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.223–231. ISBN: 978-0-7844-8403-6. DOI: 10.1061/9780784484036.023.
41. **X Li**, J Tao, and L van Paassen*. Numerical Simulations of Mangrove-Inspired Sacrificial Pile Group for Scour Mitigation. In: Geo-Congress 2022. Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.385–394. DOI: 10.1061/9780784484050.040.
42. **Y Tang** and J Tao*. Effect of Rotational Cone on Penetration Resistance and Its Implication to the Design of a Bio-Inspired Self-Burrowing Robots. In: Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.214–222. ISBN: 978-0-7844-8403-6. DOI: 10.1061/9780784484036.022.
43. **Y Zhong** and J Tao*. Bio-Inspired Vibrational Transmitters for Wireless Underground Communication. In: Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.43–52. ISBN: 978-0-7844-8406-7. DOI: 10.1061/9780784484067.005.
44. **Y Tang** and J Tao*. Effect of Rotation on Penetration: Toward a Seed Awn- Inspired Self-Burrowing Probe. In: The International Foundations Congress & Equipment Expo (IFCEE). Dallas, TX: American Society of Civil Engineers, 2021, pp.149–159. DOI: 10.1061/9780784483428.016.
45. **Y Zhong**, Y Gao*, and J Tao. Bio-Inspired Underground Communication Using Seismic Waves. In: The International Foundations Congress & Equipment Expo (IFCEE). Dallas, TX: American Society of Civil Engineers, 2021, pp.139–148. DOI: 10.1061/9780784483428.015.
46. **S Huang**, N Mahabadi, and J Tao*. Impact of Shell Opening of a Model Razor Clam on the Evolution of Force Chains in Granular Media. In: Geo-Congress 2021. Minneapolis, Minnesota: ASCE, 2020, pp.272–281. DOI: 10.1061/9780784482834.030.
47. **S Huang** and J Tao*. Bio-Inspired Dual-Anchor Burrowing: Effect of Vertical Curvature of the Shell. In: Geo-Congress 2020. Minneapolis, Minnesota: ASCE, 2020, pp.282–292. DOI: 10.1061/9780784482834.031.
48. **Y Tang**, **S Huang**, and J Tao*. Effect of Rotation on Seeds' Self-Burial Process: Insights from DEM Simulations. In: Geo-Congress 2020. Minneapolis, Minnesota: ASCE, 2020, pp.293–301. DOI: 10.1061/9780784482834.032.
49. **S Huang** and J Tao*. Modeling of the Burrowing Mechanism by Razor Clam: Role of Penetration Kinematics. In: IFCEE 2018. Orlando, Florida: ASCE, 2018, pp.547–556. DOI: 10.1061/9780784481585.053.

50. **S Huang** and J Tao*. The Interplay between Shell Opening and Foot Penetration of a Model Razor Clam: Insights from DEM Simulation. In: B2G Atlanta 2018 Bio-Mediated and Bio-Inspired Geotechnics. Atlanta, GA, 2018. https://par.nsf.gov/servlets/purl/10061092.
51. **J Li** and J Tao*. Experimental Investigation of Granular Bulk Density Effect on Bridge Local Scour under Clear-Water Conditions. In: IFCEE 2018. Orlando, Florida: ASCE, 2018, pp.735–745. DOI: 10.1061/9780784481578.070.
52. G Pandey and J Tao*. Moisture Sensitive Polymer-Modified Enzyme-Induced Carbonate Precipitation for Soil Improvement. In: B2G Atlanta 2018 Bio-Mediated and Bio-Inspired Geotechnics. Atlanta, GA, 2018.
53. **H Tao** and J Tao*. Conceptual Model of Critical Hydraulic Gradient for Piping Considering Friction Resistance. In: IS-Atlanta2018: Geo-Mechanics from Micro to Macro. Atlanta, GA, 2018.
54. **H Tao** and J Tao*. Impact of Gradation Change on Mechanical Behavior of Soil : DEM and Community Detection. In: ed. by A Zhou, J Tao, X Gu, and L Hu. Singapore: Springer, 2018, pp.959–966. ISBN: 9789811301254. DOI: 10.1007/978-981-13-0125-4_106.
55. **H Tao** and J Tao*. Quantifying the Effect of Suffusion on Strength of Soil Using Network-Science Based Community Detection Method. In: Transportation Research Board 97th Annual Meeting. 18-05445. Washington DC, United States, 2018, pp.15p. https://trid.trb.org/view/1496769.
56. X Wang× and J Tao*. Polymer-Modified Microbially-Induced Carbonate Precipitation Treatment Method for Surface Erosion Prevention. In: Transportation Research Board 97th Annual Meeting. Washington DC, United States, 2018, pp.16p. https://trid.trb.org/view/1496755.
57. R Bao, **J Li**, L Li, TJ Cutright, L Chen, J Zhu, and J Tao*. Bio-Inspired Bridge Scour Countermeasures: Streamlining and Biocementation. In: The 2017 International Conference on Transportation Infrastructure and Materials (ICTIM). ictim. Shandong, China, 2017. DOI: 10.12783/dtmse/ictim2017/10180.
58. **S Huang** and J Tao*. A DEM Study of Penetrating in Granular Materials with Changing Shape. In: Transportation Research Board 96th Annual MeetingTransportation Research Board. 17-05598. Washington, DC, 2017, pp.14p. https://trid.trb.org/view/1439217.
59. **S Huang** and J Tao*. Penetrating in Granular Materials: Effects of Penetrator Dynamics. In: Geotechnical Frontiers 2017. Orlando, Florida: ASCE, 2017, pp.604–613. DOI: 10.1061/9780784480441.063.
60. **J Li** and J Tao*. Experimental Investigation of the Pier Streamlining Effect on Bridge Local Scour under Clear Water Conditions. In: Geotechnical Frontiers 2017. Orlando, Florida: ASCE, 2017, pp.20–28. DOI: 10.1061/9780784480465.003.
61. **H Tao** and J Tao*. Numerical Modeling and Analysis of Suffusion Patterns for Granular Soils. In: Geotechnical Frontiers 2017. Orlando, Florida: ASCE, 2017, pp.487–496. DOI: 10.1061/9780784480472.051.
62. **H Tao** and J Tao*. Suffusion Patterns for Granular Soils: Observations from Numerical Simulations. In: Transportation Research Board 96th Annual Meeting. Washington DC, United States, 2017, pp.19p. https://trid.trb.org/view/1438519.

63. M Cymbal[#], **H Tao**, and J Tao[*]. Underwater Inspection with Remotely Controlled Robot and Image Based 3D Structure Reconstruction Techniques. In: Transportation Research Board 95th Annual MeetingTransportation Research Board. 16-6507. Washington DC, United States, 2016, pp.15p. https://trid.trb.org/view/1394427.
64. J Hu and J Tao[*]. Energy Harvesting from Pavement via PVDF: Hybrid Piezo -Pyroelectric Effects. In: Geo-Chicago 2016. Chicago, Illinois: ASCE, 2016, pp.556–566. ISBN: 9780784480137. DOI: 10.1061/9780784480137.053.
65. **J Li**, Y Liu, and J Tao[*]. Streamlining of Bridge Piers as Scour Countermeasures: Insights from DES Modeling. In: Fourth Geo-China International Conference. Shandong, China: ASCE, 2016, pp.85–92. ISBN: 9780784480069. DOI: 10.1061/9780784480069.011.
66. **J Li** and J Tao[*]. Coherent Dynamics of a Turbulence Structure around Streamlined Piers. In: Geo-Chicago 2016. Chicago, Illinois: ASCE, 2016, pp.651–660. ISBN: 9780784480151. DOI: 10.1061/9780784480151.064.
67. **J Li** and J Tao[*]. DES Investigation of the Effect of Pier Streamlining on Coherent Dynamics of the Turbulence Structure Around Piers. In: Transportation Research Board 95th Annual Meeting. 16-4224. Washington DC, United States: TRB, 2016, pp.14p. https://trid.trb.org/view/1393582.
68. **J Li** and J Tao[*]. DES Investigation of the Effect of Pier Streamlining on Coherent Dynamics of the Turbulence Structure Around Piers. In: 2016 Geotechnical and Structural Engineering Congress. Phoenix, Arizona, US: ASCE, 2016, pp.14p.
69. Y Liu, J Tao, X Yu, Z Liu, and X Yu[*]. Characterization of Freezing Fresh Concrete by Multiple Non- Destructive Methods. In: Fourth Geo-China International Conference. Shandong, China: ASCE, 2016, pp.125–135. ISBN: 9780784480021. DOI: 10 . 1061 / 9780784480021.017.
70. G Mopur, J Tao[*], and R Liang. Stabilization of Peat Subgrade for Existing Roadways Using Geosynthetics Encased Polyurethane Foam Columns: Laboratory Feasibility Study. In: 2016 Geotechnical and Structural Engineering Congress. Phoenix, Arizona, US: ASCE, 2016, pp.14p.
71. **H Tao** and J Tao[*]. CFD-DEM Modeling of Piping Erosion Considering the Properties of Sands. In: Geo-Chicago 2016. Chicago, Illinois: ASCE, 2016, pp.641–650. ISBN: 978-0-7844-8015-1. DOI: 10.1061/9780784480151.063.
72. **H Tao** and J Tao[*]. Numerical Modeling of the Mechanisms of Piping Erosion with Coupled CFD and DEM Method. In: Transportation Research Board 95th Annual Meeting-Transportation Research Board. 16-4200. Washington DC, United States, 2016, pp.17p. https://trid.trb.org/view/1393574.
73. J Tao[*], J Hu, and G Wu. Energy Harvesting from Pavements via PVDF: Hybrid Piezo-Pyroelectric Effects. In: SPIE Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring. Ed. by G Park. Las Vegas, Nevada, United States, 2016, pp.97992L. DOI: 10.1117/12.2218369.
74. **J Li**, J Tao[*], and X Yu. Streamlining of Bridge Pier as a Scour Countermeasure: A Feasibility Study. In: IFCEE 2015. San Antonio, Texas: ASCE, 2015, pp.319–329. ISBN: 9780784479087. DOI: 10.1061/9780784479087.032.

75. B Yu*, X Yu, J Tao, and Y Guo. Innovative Multiscale Sensing and Computational Simulations for Bridge Scour Risk Management. In: 6th International Conference on Advances in Experimental Structural Engineering; 11th International Workshop on Advanced Smart Materials and Smart Structures Technology. Urbana-Champaign, United States, 2015. http://sstl.cee.illinois.edu/papers/aeseancrisst15/318_Yu_Innovative.pdf.
76. Q Gao, J Tao, JY Hu, and X Yu*. Mechanical Behaviors of an Anisotropic Shale Rock. In: Shale Energy Engineering Conference 2014. Pittsburgh, Pennsylvania, United States: ASCE, 2014, pp.159–167. ISBN: 9780784413654. DOI: 10.1061/9780784413654.017.
77. Q Gao, J Hu, J Tao, and X Yu*. Experimental Characterization of the Anisotropic Behaviors of Shale Rock. In: Geo-Congress 2014. Atlanta, Georgia: ASCE, 2014, pp.563–571. ISBN: 9780784413272. DOI: 10.1061/9780784413272.054.
78. J Tao, X Yu, and XB Yu*. Design and Application of A Field Bridge Scour Monitoring Sensor Based on TDR. In: Transportation Research Board 93rd Annual MeetingTransportation Research Board. 14-4408. Washington DC, United States, 2014, pp.16p. https://trid.trb.org/view/1289359.
79. J Tao and X Yu*. Flow and Scour Patterns around Bridge Piers with Different Configurations: Insights from CFD Simulations. In: Geo-Congress 2014. Atlanta, GA: ASCE, 2014, pp.2655–2664. ISBN: 9780784413272. DOI: 10.1061/9780784413272.256.
80. J Tao and X Yu*. Influence of Shunt-Damping Circuit on the Dynamic Response of a Bio-Inspired Piezoelectric Micropillar Sensor. In: SPIE 2014. Vol. 9055. San Diego, California, USA: International Society for Optics and Photonics, 2014, pp.90550J. DOI: 10.1117/12.2057518.
81. J Tao and X Yu*. Sediment Transport Model Considering Turbulent Flow. In: Atlanta, GA: ASCE, 2014, pp.1072–1080. ISBN: 9780784413272. DOI: 10.1061/9780784413272.104.
82. J Huang, J Tao, and X Yu*. Feasibility analyses of carbon nanotubes for the design of a new hair flow sensor. In: 9th International Workshop on Structural Health Monitoring: A Roadmap to Intelligent Structures, IWSHM 2013. DEStech Publications, 2013, pp.2138–2146. https://asu.pure.elsevier.com/en/publications/feasibility-analyses-of-carbon-nanotubes-for-the-design-of-a-new-.
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85. J Tao, Q Gao, and X Yu*. Assessment of the Effects of Pier Configurations on the Flow Pattern and Scour: A CFD Modeling Approach. In: Transportation Research Board 92nd Annual MeetingTransportation Research Board. 13-2840. Washington DC, United States, 2013, pp.18p. https://trid.trb.org/view/1241688.

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92. J Tao, X Yu*, and J Berilla. Micropillar sensing element for bio-inspired flow sensors. In: 8th International Workshop on Structural Health Monitoring 2011: Condition-Based Maintenance and Intelligent Structures. 2011, pp.1732–1739. https://asu.pure.elsevier.com/en/publications/micropillar-sensing-element-for-bio-inspired-flow-sensors.

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Edited Books

97. L Hu, X Gu, J Tao, and A Zhou, eds. *Proceedings of GeoShanghai 2018 International Conference: Multi-Physics Processes in Soil Mechanics and Advances in Geotechnical Testing*. Springer Singapore, 2018. ISBN: 9789811300943. DOI: 10.1007/978-981-13-0095-0.
98. A Zhou, J Tao, X Gu, and L Hu, eds. *Proceedings of GeoShanghai 2018 International Conference: Fundamentals of Soil Behaviours*. Springer Singapore, 2018. ISBN: 9789811301247. DOI: 10.1007/978-981-13-0125-4.
99. R Liang, J Qian, and J Tao, eds. *Advances in Soil Dynamics and Foundation Engineering, Geotechnical Special Publication No. 240*. Geo-Shanghai 2014. American Society of Civil Engineers, 2014. ISBN: 978-0-7844-1342-5. DOI: 10.1061/9780784413425.

Technical Reports

100. Q Huang, J Thomas, and J Tao. *Evaluation of Effective Bridge Deck Repair Maintenance Methods*. Final Report FHWA/OH-2018-11. University of Akron; Ohio Department of Transportation, 2018, 35p. https://trid.trb.org/view/1565998.
101. J Tao. *Use of Crushed Recycled Glass in the Construction of Local Roadways Current Status of Recycled Glass Collection and Processing in the State of Ohio*. FHWA/OH-2017-19. University of Akron, 2017. https://rosap.ntl.bts.gov/view/dot/32288.
102. J Tao, J Li, S Huang, R Liang, A Ozdogan-Dolcek, and W Likos. *Performance Comparison of Abutment and Retaining Wall Drainage Systems*. Final Report FHWA/OH-2017-36. University of Akron; Ohio Department of Transportation, 2017, 200p. https://trid.trb.org/view/1507624.
103. J Tao, Z Luo, and G Pandey. *Evaluation of Post Flooding Shoulder Reconditioning - State Library of Ohio Digital Collection*. Final report 974924814. Columbus, Ohio: University of Akron; Ohio Department of Transportation, 2017, p. 84. https://ohiomemory.org/digital/collection/p267401ccp2/id/14690/.
104. J Tao and R Liang. *Stabilization of Peat Deposits for Roadway Construction and Remediation*. Final Report FHWA/OH-2015/22. University of Akron; Ohio Department of Transportation, 2015, 85p. https://trid.trb.org/view/1371637.

Preprints

105. D Li, **S Huang**, **Y Tang**, J Tao, H Marvi, and DM Aukes*. *Compliant Fins for Locomotion in Granular Media*. 2021. arXiv: 2101.03624 [cs]. http://arxiv.org/abs/2101.03624.

Working Papers

106. S Huang×, N Mahabadi, and J Tao*. "Photoelasticity Reveals Expansion-Penetration Interplay in Granular Packing". under preparation.
107. S Huang×, N Mahabadi, and J Tao*. "Visulizing Force and Displacement Fields in Soil-Structure Interactions Using Phtoelasticity". under preparation.
108. S Huang× and J Tao*. "The Interplay between Shell Opening and Foot Penetration of a Model Razor Clam". To be submitted to Soils and Foundations.
109. S Huang×, **Y Tang**, H Bagheri, D Li, D Aukes, H Marvi, and J Tao*. "Self-Burrowing Mechanisms: Bioinsprations and Bio-Inspired Robots". under preparation.

110. **Y Zhong** and J Tao*. "Bio-Inspired Underground Communication Using Seismic Waves: A Preliminary Study". under review.

Presentations

Invited Talks

Keynote	2018-08	"Bio-inspired Geotechnics". *US-Korea Conference on Science, Technology and Entrepreneurship*. New York, NY
Keynote	2017-05	"Bio-inspired Smart and Sustainable Infrastructure". *The 2 nd Transportation Research Congress*. Beijing, China
Invited Talk	2022-12	"Short Course on Bio-inspired Geotechnics". *University of Natural Recourses and Life Sciences*. Vienna, Austria
Invited Talk	2022-12	"Bio-inspired Geotechnics in a Nutshell". *ASCE Web Conference on Bio-inspired Geotechnics*. Virtual
Invited Talk	2022-12	"Bio-inspired active underground sensing network". *ASCE Web Conference on Bio-inspired Geotechnics*. Virtual
Invited Talk	2022-11	"An Introduction to Bio-inspired Geotechnics". *Xi'an University of Technology*. Virtual, Xi'an, China
Invited Talk	2022-08	"'Ground-breaking' bio-inspired geotechnics at ASU". *Workshop on Bio- and Intelligent Geotechnics*. Virtual, Chongqing University
Invited Talk	2022-05	"'Ground-breaking' bio-inspired geotechnics at ASU". *Arizona Geo-Institute Member Meeting*. Scottsdale, AZ
Invited Talk	2022-05	"Burrowing is a Geotechnical Engineering Problem". *18th Purdue Geotechnical Society Workshop*. Purdue University
Invited Talk	2022-04	"Bio-inspired Scour Countermeasured". *ASCE SEI Bio-inspired Structures Committee Lightning Talk*. Virtual and Altlanta, Georgia
Invited Talk	2022-04	"Burrowing and Symmetry Breaking". *Workshop on Grand Challenges for Burrowing Soft Robots, Robosoft 2022*. Virtual and Edingburgh, Scotland
Invited Talk	2021-06	"Bio-inspired Geotechnics and Self-burrowing robot". *ASCE SEI Bio-inspired Structures Committee Lightning Talk*. Virtual
Invited Talk	2021-02	"Bio-inspired Geotechnics and Self-burrowing robot". *PITT Geotechnical Colloquium Series*. Virtual and Pittsburgh, Pennsylvania, United States
Invited Talk	2020-01	"SBOR: a minimalistic soft self-burrowing-out robot inspired by razor clams". *Seminar for Center of Bio-mediated and Bio-inspired Geotechnics*. Tempe, AZ, USA
Invited Talk	2019-07	"Overview and Reflections of the Course Bioinspired Design at ASU". *1st International Workshop on Bioinspired Geotechnics*. Pacific Grove, CA
Invited Talk	2019-06	"Razor clam inspired burrowing robot". *University of California, Davis*. Davis, CA, USA
Invited Talk	2019-05	"Bio-inspired Geotechnics". *2019 CBBG REU/RET/YS Onboarding*. Tempe, AZ, USA
Invited Talk	2019-03	"Bio-inspired Geotechnics". *WSU Civil Engineering Graduate Seminar Series*. Virtual and WSU

Invited Talk	2018-09	"Bridge Scour and its Countermeasures: Streamlining, Biocementation and Monitoring". *Geotechnical Special Presentation, Arizona Chapters for the Geo-Institute and Association of Engineering and Environmental Geologists*. Scottsdale, AZ
Invited Talk	2018-05	"Bio-inspired Geotechnics". *Hohai University*. Nanjing, China
Invited Talk	2018-04	"Bio-inspired Geotechnics and Self-burrowing robot". *Geosciences Colloquium Series at University of Akron*. Akron, Ohio, USA
Invited Talk	2017-06	"Bio-inspired Smart and Sustainable Infrastructure". *Huazhong University of Science and Technology*. Wuhan, Hubei, China
Invited Talk	2017-06	"Bio-inspired Smart and Sustainable Infrastructure". *Hebei University of Technology*. Tianjin, China
Invited Talk	2017-06	"Bio-inspired Smart and Sustainable Infrastructure". *Tongji University*. Shanghai, China
Invited Talk	2017-05	"Bio-inspired Smart and Sustainable Infrastructure". *University of California, Davis*. Davis, CA, USA
Invited Talk	2016-01	"Underwater Inspection with Remotely Controlled Robot and Image Based 3D Structure Reconstruction Techniques". *Transportation Research Board 95th Annual Meeting*. Washington DC, United States
Invited Talk	2014-06	"Bridge Scour: Monitoring, Sensing and Modelling". *China University of Geosciences*. Beijing, China
Invited Talk	2014-06	"Bridge Scour: Monitoring, Sensing and Modelling". *Hebei University of Technology*. Tianjin, China
Invited Talk	2014-05	"Bridge Scour: Monitoring, Sensing and Modelling". *Tongji University*. Shanghai, China
Invited Talk	2014-05	"Bridge Scour: Monitoring, Sensing and Modelling". *Guilin University*. Guilin, Guangxi, China
Invited Talk	2013-03	"Bridge Scour: Monitoring, Sensing and Modelling". *The University of Akron*. Akron, Ohio, USA
Invited Talk	2013-03	"Bridge Scour: Monitoring, Sensing and Modelling". *Purdue University North Central*. Westville, Indiana, USA

Podium Presentations

1. S Huang[×], N Mahabadi, and J Tao[*~]. Penetration and Relaxation in Dry Granular Materials: Insights from Photoelasticity. In: Geo-Congress 2022. Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.130–139. ISBN: 978-0-7844-8404-3. DOI: 10.1061/9780784484043.013.
2. S Huang[×~] and J Tao[*]. Bioinspired Horizontal Self-Burrowing Robot. In: Geo-Congress 2022. Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.223–231. ISBN: 978-0-7844-8403-6. DOI: 10.1061/9780784484036.023.
3. **Y Tang**[~] and J Tao[*]. Effect of Rotational Cone on Penetration Resistance and Its Implication to the Design of a Bio-Inspired Self-Burrowing Robots. In: Geo-Congress 2022. Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.214–222. ISBN: 978-0-7844-8403-6. DOI: 10.1061/9780784484036.022.

4. **Y Zhong**~ and J Tao*. Bio-Inspired Vibrational Transmitters for Wireless Underground Communication. In: Geo-Congress 2022. Charlotte, North Carolina: American Society of Civil Engineers, 2022, pp.43–52. ISBN: 978-0-7844-8406-7. DOI: 10.1061/9780784484067.005.
5. **S Huang**~ and J Tao*. Force-Chain Evolution in Granular Packings under a Razor-Clam Inspired Penetration. In: APS March Meeting 2021. Virtual: American Physical Society, 2021. https://meetings.aps.org/Meeting/MAR21/Session/S14.2.
6. Y Tang~ and J Tao*. Effect of Rotation on Penetration: Toward a Seed Awn- Inspired Self-Burrowing Probe. In: The International Foundations Congress & Equipment Expo (IFCEE). Dallas, TX, 2021, pp.149–159. DOI: 10.1061/9780784483428.016.
7. **Y Zhong**~, Y Gao*, and J Tao. Bio-Inspired Underground Communication Using Seismic Waves. In: The International Foundations Congress & Equipment Expo (IFCEE). Dallas, TX: American Society of Civil Engineers, 2021, pp.139–148. DOI: 10.1061/9780784483428.015.
8. **S Huang**~ and J Tao*. How Does the Razor Clam Burrow Upward: Insights from a Minimalistic Self-Burrowing Soft Robot. In: ROBOTICS-INSPIRED BIOLOGY (Zoom). 2020. http://gravishlab.ucsd.edu/iros2020/.
9. **S Huang**~ and J Tao*. 2D Simulation of the Bioinspired Dual-Anchor Burrowing Mechanism in Dry Sand. In: Engineering Mechanics Institute 2019 Conference (Pasadena, California, United States). 2019. https://emi2019.caltech.edu/documents/4967/1500_ExOrdo-emi2019-Version-3.pdf.
10. **S Huang**~, J Tao*, and N Mahabadi. Impact of Shell Opening of a Model Razor Clam on the Evolution of Force Chains in Granular Media. In: Engineering Mechanics Institute 2019 Conference (Pasadena, California, United States). 2019. https://emi2019.caltech.edu/documents/4967/1500_ExOrdo-emi2019-Version-3.pdf.
11. **Y Tang**~, **S Huang**, and J Tao*. Effect of Rotation on Seeds' Self-Burial Process: Insights from DEM Simulations. In: Engineering Mechanics Institute 2019 Conference (Pasadena, California, United States). 2019. https://emi2019.caltech.edu/documents/4967/1500_ExOrdo-emi2019-Version-3.pdf.
12. **S Huang**~ and J Tao*. Modeling of the Burrowing Mechanism by Razor Clam: Role of Penetration Kinematics. In: IFCEE 2018. Orlando, Florida: ASCE, 2018, pp.547–556. DOI: 10.1061/9780784481585.053.
13. **J Li**~ and J Tao*. Experimental Investigation of Granular Bulk Density Effect on Bridge Local Scour under Clear-Water Conditions. In: IFCEE 2018. Orlando, Florida: ASCE, 2018, pp.735–745. DOI: 10.1061/9780784481578.070.
14. G Pandey and J Tao*~. Moisture Sensitive Polymer-Modified Enzyme-Induced Carbonate Precipitation for Soil Improvement. In: B2G Atlanta 2018 Bio-Mediated and Bio-Inspired Geotechnics. Atlanta, GA, 2018.
15. **H Tao** and J Tao*~. Impact of Gradation Change on Mechanical Behavior of Soil : DEM and Community Detection. In: ed. by A Zhou, J Tao, X Gu, and L Hu. Singapore: Springer, 2018, pp.959–966. ISBN: 9789811301254. DOI: 10.1007/978-981-13-0125-4_106.

16. X Wang[×] and J Tao[*~]. Polymer-Modified Microbially-Induced Carbonate Precipitation Treatment Method for Surface Erosion Prevention. In: Transportation Research Board 97th Annual Meeting. Washington DC, United States, 2018, pp.16p. https://trid.trb.org/view/1496755.
17. R Bao, **J Li**, L Li, TJ Cutright, L Chen, J Zhu, and J Tao[*~]. Bio-Inspired Bridge Scour Countermeasures: Streamlining and Biocementation. In: The 2017 International Conference on Transportation Infrastructure and Materials (ICTIM). Shandong, China, 2017. DOI: 10.12783/dtmse/ictim2017/10180.
18. **S Huang**[~] and J Tao[*]. A DEM Study of Penetrating in Granular Materials with Changing Shape. In: (Washington, DC). 2017. https://trid.trb.org/view/1439217.
19. **J Li**[~] and J Tao[*]. Experimental Investigation of the Pier Streamlining Effect on Bridge Local Scour under Clear Water Conditions. In: Geotechnical Frontiers 2017. Orlando, Florida: ASCE, 2017, pp.20–28. DOI: 10.1061/9780784480465.003.
20. **H Tao**[~] and J Tao[*]. Suffusion Patterns for Granular Soils: Observations from Numerical Simulations. In: Transportation Research Board 96th Annual Meeting. Washington DC, United States, 2017, pp.19p. https://trid.trb.org/view/1438519.
21. M Cymbal[#], **H Tao**, and J Tao[*~]. Underwater Inspection with Remotely Controlled Robot and Image Based 3D Structure Reconstruction Techniques. In: Transportation Research Board 95th Annual MeetingTransportation Research Board. Washington DC, United States, 2016, pp.15p. https://trid.trb.org/view/1394427.
22. J Hu and J Tao[*~]. Energy Harvesting from Pavement via PVDF: Hybrid Piezo - Pyroelectric Effects. In: Geo-Chicago 2016. Chicago, Illinois: ASCE, 2016, pp.556–566. DOI: 10.1061/9780784480137.053.
23. **J Li**[~], Y Liu, and J Tao[*]. Streamlining of Bridge Piers as Scour Countermeasures: Insights from DES Modeling. In: Fourth Geo-China International Conference. Shandong, China: ASCE, 2016, pp.85–92. DOI: 10.1061/9780784480069.011.
24. **J Li**[~] and J Tao[*]. DES Investigation of the Effect of Pier Streamlining on Coherent Dynamics of the Turbulence Structure Around Piers. In: Transportation Research Board 95th Annual Meeting. Washington DC, United States: TRB, 2016, pp.14p. https://trid.trb.org/view/1393582.
25. G Mopur, J Tao[*~], and Liang, Robert. Stabilization of Peat Subgrade for Existing Roadways Using Geosynthetics Encased Polyurethane Foam Columns: Laboratory Feasibility Study. In: 2016 Geotechnical and Structural Engineering Congress. Phoenix, Arizona, US: ASCE, 2016, pp.14p.
26. **H Tao**[~] and J Tao[*]. Numerical Modeling of the Mechanisms of Piping Erosion with Coupled CFD and DEM Method. In: Transportation Research Board 95th Annual Meeting-Transportation Research Board. Washington DC, United States, 2016, pp.17p. https://trid.trb.org/view/1393574.
27. J Tao[*~], J Hu, and G Wu. Energy Harvesting from Pavements via PVDF: Hybrid Piezo-Pyroelectric Effects. In: SPIE Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring. Ed. by G Park. Las Vegas, Nevada, United States, 2016, pp.97992L. DOI: 10.1117/12.2218369.

28. **J Li**~, J Tao*, and X Yu. Streamlining of Bridge Pier as a Scour Countermeasure: A Feasibility Study. In: IFCEE 2015. San Antonio, Texas: ASCE, 2015, pp.319–329. DOI: 10.1061/9780784479087.032.
29. J Tao~, X Yu, and XB Yu*. Design and Application of A Field Bridge Scour Monitoring Sensor Based on TDR. In: Transportation Research Board 93rd Annual MeetingTransportation Research Board. Washington DC, United States, 2014, pp.16p. https://trid.trb.org/view/1289359.
30. J Tao~ and X Yu*. Influence of Shunt-Damping Circuit on the Dynamic Response of a Bio-Inspired Piezoelectric Micropillar Sensor. In: SPIE 2014. Vol. 9055. San Diego, California, USA: International Society for Optics and Photonics, 2014, pp.90550J. DOI: 10.1117/12.2057518.
31. J Huang~, J Tao, and X Yu*. Feasibility analyses of carbon nanotubes for the design of a new hair flow sensor. In: 9th International Workshop on Structural Health Monitoring: A Roadmap to Intelligent Structures, IWSHM 2013. DEStech Publications, 2013, pp.2138–2146. https://asu.pure.elsevier.com/en/publications/feasibility-analyses-of-carbon-nanotubes-for-the-design-of-a-new-.
32. J Tao~ and X Yu*. Optimization of bio-inspired piezoelectric composite hair sensor - Mechanical impedance matching. In: 9th International Workshop on Structural Health Monitoring: A Roadmap to Intelligent Structures, IWSHM 2013. DEStech Publications, 2013, pp.2157–2165. https://asu.pure.elsevier.com/en/publications/optimization-of-bio-inspired-piezoelectric-composite-hair-sensor-.
33. J Tao~, Q Gao, and X Yu*. Assessment of the Effects of Pier Configurations on the Flow Pattern and Scour: A CFD Modeling Approach. In: Transportation Research Board 92nd Annual MeetingTransportation Research Board. Washington DC, United States, 2013, pp.18p. https://trid.trb.org/view/1241688.
34. J Tao~, X Yu, and X Yu*. Real-Time TDR Field Bridge Scour Monitoring System. In: Structures Congress 2013. Pittsburgh, Pennsylvania, United States: ASCE, 2013, pp.2996–3009. DOI: 10.1061/9780784412848.262.
35. J Tao~, X Yu*, and J Berilla. Micropillar sensing element for bio-inspired flow sensors. In: 8th International Workshop on Structural Health Monitoring 2011: Condition-Based Maintenance and Intelligent Structures. 2011, pp.1732–1739. https://asu.pure.elsevier.com/en/publications/micropillar-sensing-element-for-bio-inspired-flow-sensors.
36. J Tao~, M Richardson, X Yu*, B Zhang, Y Sun, and Z Liu. Performance Evaluation of a Wireless Sensor Network Protocol for Structural Health Monitoring. In: Transportation Research Board 90th Annual MeetingTransportation Research Board. Washington DC, United States, 2011, pp.15p. https://trid.trb.org/view/1092923.

PROFESSIONAL ACTIVITIES AND SERVICE

SUMMARY OF PROFESSIONAL ACTIVITIES AND SERVICE

Editor, Associate Editor for peer-reviewed journals	1
International/national conference chaired	3
International/national conference committees	4
International/national conference sessions organized	6
International/national conference sessions chaired	6
Member of Editorial Board	2
Peer Reviewer for Journals	30
Proposal Review Service for Funding Agencies	2
Unit-level Committees	2

Conference Organizing

2025	Co-chair @ International Conference on Biomediated and Bioinspired Geotechnics	Tempe, USA
2024	Co-chair @ GeoShanghai International Conference 2024 (GeoShanghai 2024)	Shanghai, China
2022	Co-chair @ ASCE Web Conference on Bio-inspired Geotechnics	Virtial
2021	Organizing Committee and Track Chair @ The 10th International Conference on Scour and Erosion (ICSE-10)	Online
2021	Session Chair @ The International Foundations Congress & Equipment Expo (IFCEE)	Online and Dallas, TX
2019	Session Chair @ Geo-Congress 2019	Philadelphia, CA
2019	Session Chair @ Engineering Mechanics Institute Conference	Pasadena, CA
2019	Organizing Committee @ The 9th Annual IACIP Workshop	Washington, D.C.
2018	Local Organizing Committee @ Early Career Geotechnical Faculty Workshop	Cleveland, OH
2018	Co-Editor @ The 4th GeoShanghai International Conference	Shanghai, China
2018	Organizing Committee @ International Conference on Transportation Infrastructure and Materials	Tianjin, China
2017	Session Chair @ World Transportation Convention	Beijing, China

2017	Session Chair @ International Conference on Transportation Infrastructure and Materials (ICTIM)	Beijing, China
2017	Organizing Committee @ ASCE Engineering Mechanics Institute Conference	San Diego, CA
2017	Organizing Committee @ The 7th Annual IACIP Workshop	Washington, D.C.
2016	Session Chair @ Geo-Chicago	Chicago, Illinois
2014	Co-Editor @ The 3rd GeoShanghai International Conference	Shanghai, China
2014	Co-Chair @ The 4th Annual IACIP Workshop	Washington, D.C.

Editorial Board

- ASTM Journal of Testing and Evaluation
- Co-Guest Editor for Special Issue on "Bio-inspired Geotechnics" by Acta Geotechnica
- Co-Editor for Special Issue on "Bio-inspired Burrowing Robots" by Frontiers In Robotics and AI

Reviewing Service

National Science Foundation	
Hong Kong Research Grant Council	
Acta Geotechnica	Springer
Canadian Geotechnical Journal	Canadian Science Publishing
Computers and Geomechanics	Elsevier
Construction and Building Materials	Elsevier
Engineering Geology	Elsevier
Geotechnical Testing Journal	ASTM
Géotechnique	ICE
Granular Matter	Springer
International Journal of Heat and Mass Transfer	Elsevier
International Journal for Numerical and Analytical Methods in Geomechanics	Wiley
International Journal of Geomechanics	ASCE
International Journal of Geosynthetics and Ground Engineering	Springer
International Journal of Geotechnical Engineering	Taylor and Francis
Journal of Aerospace Engineering	ASCE
Journal of Geotechnical and Geoenvironmental Engineering	ASCE
Journal of Hydraulic Engineering	ASCE
Journal of Infrastructure Preservation and Resilience	Springer
Journal of Infrastructure Systems	ASCE
Journal of Materials in Civil Engineering	ASCE

Journal of Testing and Evaluations	ASTM
Journal of Transportation Engineering	ASCE
Journal of Renewable and Sustainable Energy	AIP
Materials and Design	Elsevier
Microsystem Technologies	Springer
Natural Hazards	Springer
Ocean Engineering	Elsevier
Powder Technology	Elsevier
Science Robotics	Science Magzine
Sensors	MDPI
Smart Structures and Systems, An International Journal	Techno Press
Regular reviewer for conferences	ASCE, TRB, ISSMGE

University Service

2020–	Committee Member	Curriculum Committee @ CBBG
2018–	Committee Member	CESE Academic Affairs (Curriculum) Committee of School of Sustainable Engineering and the Built Environment @ ASU
2018–	Faculty Volunteer	E2 Camp @ ASU
2022–2022	Panelist	SSEBE NSF CAREER proposal workshop @ ASU
2021–2021	Panelist	SSEBE NSF CAREER proposal workshop @ ASU
2020–2020	Panelist	FSE NSF CAREER proposal writing workshop @ ASU
2019–2019	Faculty representative	Graduation Convocation @ ASU
2014–2018	Committee Chair	Computer Committee of Department of Civil Engineering @ UAkron
2013–2018	Committee Co-Chair	Seminar Committee of Department of Civil Engineering @ UAkron
2014–2018	Committee Member	Faculty Research Committee @ UAkron

Professional Committee Service

2017–	Committee Member	Committee on Strategic Planning *of* International Association of Chinese Infrastructure Professionals (IACIP)
2017–	Chair for Award Subcommittee	Committee on Geotechnics of Soil Erosion *of* ASCE Geo-Institute
2015–	Committee Member	Committee on Engineering Geology and Site Characterization *of* ASCE Geo-Institute
2017–2019	Committee Chair	Committee on Slope Stability and Retaining Structures *of* World Transport Convention (China)
2016–2019	Committee Member	AFS40 Committee on Subsurface Soil-Structure Interaction *of* TRB
2016–2019	Committee Member	AFD35 Committee on Bridge Management *of* TRB

2016–2019	Committee Member	AFD20 Committee on Pavement Monitoring and Evaluation *of* TRB
2015–2018	Committee Member	AFS10 Standing Committee on Transportation Earthworks *of* TRB
2014–2017	Young Committee Member	AFS60 Standing Committee on Hydrology *of* TRB
2013–2016	Committee Member	AFD35 Committee on Bridge Management *of* TRB
2013–2016	Young Committee Member	AFD20 Committee on Pavement Monitoring and Evaluation *of* TRB
2014–2014	Young Committee Member	AFS40 Committee on Subsurface Soil-Structure Interaction *of* TRB

PERSONNEL: STUDENT SUPERVISOR/MENTORING, TEACHING, DISSERTATION COMMITTEES, RESEARCHERS, AND OUTREACH

SUMMARY OF MENTORING

Postdoctoral Researchers (current/previous)	1/0
Ph.D. Students Graduated	3
Ph.D. Students Current	4
M.S. Students Current	2
M.S. Students Graduated	8
Undergraduate Students (Research)	16
High-School Students (Research)	4
Student Fellowships and Awards	12

SUMMARY OF TEACHING

Undergraduate Courses Taught, including New Course Development	16 times, 6 different courses
Graduate Courses Taught, including New Courses Development	13 times, 5 different courses
Average Teaching Evaluation Score for Undergraduate Courses Taught at ASU	4.63
Average Teaching Evaluation Score for Graduate Courses Taught at ASU	4.86

Mentoring

PostDoc

2021–2021	Sichuan Huang	ASU	Clam + Robot

Ph.D. Students

2021–	Sarina Shahhosseini	ASU	Burrowing Robots
2020–	Xiwei Li	ASU	Mangrove + Scour *Co-advised with Professor Leon van Paassen*
2019–	Yi Zhong	ASU	Lizard/Mole +Underground Communication
2018–	Yong Tang	ASU	Seed Awn + Burrowing Mechanism
2018–2020	Sichuan Huang	ASU	Clam + Burrowing Mechanism
2014–2018	Junhong Li	UAkron	Bridge Scour
2014–2018	Hui Tao	UAkron	Internal Erosion

M.S. Students

2023–	Marilyn Mendoza	ASU	Burrowing Robots
2022–	Manthan Rajendra Pai	ASU	Burrowing Robots
2022–	Dishika Agrawal	ASU	Burrowing Robots
2021–	Md Ragib Shaharear	ASU	Burrowing Robots
2019–2021	Brian Rudolph	ASU	*Co-advised with Professor Claudia Zapata*
2019–2021	Drew Enns	ASU	Mangrove + Scour *Co-advised with Professor Leon van Paassen*
2019–2020	Joel Ramirez	ASU	Mangrove + Scour *Co-advised with Professor Leon van Paassen; Student graduated without thesis*
2015–2018	Sichuan Huang	UAkron	Burrowing Mechanisms
2016–2018	Ganesh Pandey	UAkron	Recycled glass
2015–2017	Ruotian Bao	UAkron	MICP
2015–2016	Brendan Patrick Lieske	UAkron	Shale Strength
2014–2016	Jie Hu	UAkron	Energy Harvesting
2015–2016	Goutham Narayan Mopur	UAkron	Peat Stabilization
2013–2014	Candice Fellows	UAkron	Energy Piles *Co-advised with Professor Robert Liang*

Undergraduate Research Students

2021–	Mohan Parekh	ASU	Burrowing Robots
2021–2021	Ashwin Kumar S	ASU	Burrowing Robots *SURI, from Easwari Engineering College, India*
2021–2021	Harsh Rajkamal	ASU	Burrowing Robots *SURI, from Vellore Institute of Technology, India*
2021–2021	Shesha Sai Tushar Kanchipuram	ASU	Burrowing Robots *SURI, from Biral Institute of Technology and Science, Pilani, India*
2021–2021	Zakary Vladich	ASU	Burrowing Robots *REU, from Northern Arizona University*
2021–2021	Leslie Bautista and Marilyn Mendoza	ASU	Geo-prediction *Co-advised with Professors Ed Kavazanjian and Leon van Paassen*
2020–2021	Chung Ting Wong	ASU	Mangrove + Scour *Co-advised with Professor Leon van Paassen*
2020–2020	Andrew Suarez	ASU	Burrowing Robots *REU, Veteran*
2019–2021	Alexandria Ardente	ASU	Burrowing Robots
2019–2019	Lindsay Lee	ASU	Burrowing Robots *Mechanical Engineering*

2019–2019	Amanda Clarke	ASU	Burrowing Robots *VIP program*
2019–2019	Brandon Grimes	ASU	Burrowing Robots *VIP program*
2019–2020	Stephen Dages	ASU	Burrowing Robots *REU, Physics, from West Chester University*
2019–2019	Khem Holden	ASU	Burrowing Robots *REU, Robotics, from University of California, Sant Cruz*
2019–2019	Hyun Choi	ASU	Burrowing Robots *REU, Biology*
2019–2019	Makram Jreissat	ASU	Burrowing Robots
2017–2017	Nathaniel Green	UAkron	MICP *Biology*
2016–2017	Gwen Baker	UAkron	Recycled glass
2014–2015	Matthew Cymbal	UAkron	Underwater Robot
2015–2015	Daniel Gutwein	UAkron	Energy Harvesting

High School Research Students

2021–2021	Jannette Marti-Subirana	Chandler Preparatory Academy	Burrowing Mechanisms
2017–2017	Sophia Solganik	Shaker Heights High School	DEM simulation
2017–2017	Lillian Gonzalez	Home-schooled	DEM simulation
2016–2016	Nicholas Robinson	Green High School	3D printing
2016–2016	Brandon Leap	Kent High School	3D printing

Visiting Scholars

2019–2020	Yunqi Gao	Hohai University	Seismic wave
2016–2018	Xiangrong Wang	Peking University	MICP
2015–2016	Haichao Li	Heibei University of Technology	Explosive compaction

Served as a Thesis Committee Member for

2022–	Saeedeh Naziri	NMSU	Ph.D. *in Civil Engineering*
2019–	Thibaut Houette	UAkron	Ph.D. *in Biology*
2021–2021	Jasmine Victoria	UC Davis	M.S. *in Civil Engineering*
2020–2020	Nana Kwame Ofosu	ASU	M.S. *in Mechanical Engineering*
2019–2019	Daehyun Kim	ASU	Ph.D. *in Civil Engineering*
2018–2020	Ariana Rupp	UAkron	Ph.D. *in Biology*
2016–2017	Long Chen	UAkron	Ph.D. *in Chemical Engineering*
2017–2017	Baiping Ren	UAkron	Ph.D. *in Chemical Engineering*
2017–2017	Bimal Thapa	UAkron	M.S. *in Civil Engineering*
2017–2017	Krishna Vamshi	UAkron	M.S. *in Civil Engineering*
2016–2016	Li Zhao	UAkron	Ph.D. *in Civil Engineering*
2016–2016	Behnam Kiani	UAkron	Ph.D. *in Civil Engineering*

2016–2016	Tanvir Quasem	UAkron	M.S. *in Civil Engineering*
2015–2015	Hui Wang	UAkron	Ph.D. *in Civil Engineering*
2015–2015	Ayako Yajima	UAkron	Ph.D. *in Civil Engineering*
2015–2015	Morteza Vatani	UAkron	M.S. *in Mechanical Engineering*
2015–2015	Ahmed F. Elghriany	UAkron	Ph.D. *in Civil Engineering*
2014–2014	Abbas Rahimi	UAkron	Ph.D. *in Mechanical Engineering*
2014–2014	Ali Moradkhany	UAkron	Ph.D. *in Civil Engineering*

Student Success

2022	Sarina Shahhosseini	Third Place Outstanding Research Poster Award @ 2022 CBBG Mid-Year Meeting
2021	Alexandra Ardentte	FURI scholarship @ ASU Schools of Engineering
2021	Leslie Bautista and Marilyn Mendoza	Geo-prediction Competition Finalist @ ASCE Geo-institute
2021	Yong Tang	Geo-poster Competition Finalist (Top 6) @ ASCE Geo-institute
2021	Yi Zhong	Second-place Poster Award @ ASU Annual SSEBE Graduate Research Symposium
2020	Alexandra Ardentte	FURI scholarship @ ASU Schools of Engineering
2020	Sichuan Huang	Second-place Poster Award @ ASU Annual SSEBE Graduate Research Symposium
2019	Sichuan Huang	Outstanding Volunteer Award @ 4th CBBG Annual Meeting
2019	Sichuan Huang	Third Place Outstanding Research Poster Award @ 4th CBBG Annual Meeting
2019	Sichuan Huang	Third Place in Poster Competition @ ASU Annual SSEBE Graduate Research Symposium
2017	Ruotian Bao and Junhong Li	Excellent Paper Award @ International Conference on Transportation Infrastructure and Materials
2016	Junhong Li	Civil Engineering Department Scholarship Awards @ University of Akron
2016	Sichuan Huang	Software training scholarship @ Itasca Education Partnership (IEP) program
2015	Hui Tao	First Place Award in Poster Competition @ IACIP

Outreach Activities

2022	Volunteer	ASU Homecoming Block Party Science Booth (CBBG)	Arizona State University
2020	Volunteer	ASU Engineering Open Door	Arizona State University
2019	Volunteer	ASU Homecoming Block Party Science Booth (CBBG)	Arizona State University
2019	Faculty Mentor	REU/RET	ASU CBBG
2019	Volunteer	CompuPower SRE Lab Tours	Arizona State University
2018	Volunteer	ASU RECHARGE Conference	Arizona State University
2018	Volunteer	ASU Engineering Open Door	Arizona State University
2018	Volunteer	ASU Homecoming Block Party Science Booth (CBBG)	Arizona State University
2017	Mentor	High School Summer Research Academy in Engineering	The University of Akron
2017	Supervisor	Science Olympiad Tournament	Akron, Ohio
2016	Mentor	High School Summer Research Academy in Engineering	The University of Akron
2016	Judge	Northeastern Ohio STEM Science Fair	Kent State University
2015	Speed Mentor	Northeastern Ohio STEM Science Fair	Hudson High School
2011	Junior Mentor	Introduce a Girl into Engineering	Case Western Reserve University

Teaching

At ASU

Course	Term/Year	Credits	Enrollment	Evaluation
CEE 550 Soil Behavior	Fall/2022	3	6	4.5/5
CEE 452 Foundation Engineering	Spring/2022	3	29	4.25/5
CEE 598 Foundation Engineering	Spring/2022	3	2	4.5/5
CEE 550 Soil Behavior	Fall/2021	3	13	4.6/5
CEE 452 Foundation Engineering	Spring/2021	3	49	4.52/5
CEE 598 Foundation Engineering	Spring/2021	3	4	4.5/5
CEE 494 Bio-inspired Design	Spring/2021	3	14	4.8/5
CEE 598 Bio-inspired Design	Spring/2021	3	6	5/5
CEE 452 Foundation Engineering	Spring/2020	3	57	4.45/5
CEE 598 Foundation Engineering	Spring/2020	3	3	5/5
CEE 550 Soil Behavior	Fall/2019	3	13	4.82/5
CEE 494 Bio-inspired Design	Spring/2019	3	13	4.8/5
CEE 598 Bio-inspired Design	Spring/2019	3	8	4.78/5
CEE 550 Soil Behavior	Fall/2018	3	10	4.85/5

At UAkron

Course	Term/Year	Credits	Enrollment	Evaluation
4300:314 Geotechnical Engineering	Spring/2018	3	48	NA/5
4300:201 Statics	Fall/2017	3	60	NA/5
4300:518 Soil and Rock Exploration	Fall/2017	3	15	NA/5
4300:314 Geotechnical Engineering	Spring/2017	3	49	3.85/5
4300:694 Fundamental Behaviors of Soil	Spring/2017	3	7	5/5
4300:201 Statics	Fall/2016	3	47	4.51/5
4300:518 Soil and Rock Exploration	Fall/2016	3	12	4.8/5
4300:314 Geotechnical Engineering	Spring/2016	3	45	4.42/5
4300:694 Fundamental Behaviors of Soil	Spring/2016	3	5	4.9/5
4300:201 Statics	Fall/2015	3	60	4.32/5
4300:518 Soil and Rock Exploration	Fall/2015	3	14	4.68/5
4300:314 Geotechnical Engineering	Spring/2015	3	67	4.2/5
4300:694 Fundamental Behaviors of Soil	Spring/2015	3	4	5/5
4300:201 Statics	Fall/2014	3	60	4.27/5
4300:418 Soil and Rock Exploration	Fall/2014	3	2	4.43/5
4300:518 Soil and Rock Exploration	Fall/2014	3	3	4.88/5
4300:314 Geotechnical Engineering	Spring/2014	3	40	4/5
4300:314 Geotechnical Lab	Spring/2014	1	5	5/5
4300:201 Statics	Fall/2013	3	49	4.2/5

RESEARCH SUPPORT

SUMMARY OF RESEARCH SUPPORT

Total amount of all pending proposals (as of 5/10/2021)	$2,025,000
Total amount of all awards	$18,235,611
Tao's recognition in all awards	$1,612,602
Total amount of all awards in which Tao is the PI	$1,550,883
Total award amount received at ASU (as of 5/10/2021)	$10,293,317
Research Expenditures (as of 5/10/2021)	$858,729

Research Support

External Funding

2019–2021	PI: Julian Tao; Co-PI: Daniel Aukes, Hamidreza Marvi. "EAGER SitS: Active Self-Boring Robots that Enable Next Generation Dynamic Underground Wireless Sensing Networks: Fusion of Fast Prototyping, Modeling and Learning". *National Science Foundation* (Tao's share: 34%)	$316,000
2017–	PI: Julian Tao; "CAREER: Integrated Research and Education on Bio-Inspired Burrowing". *National Science Foundation* (Tao's share: 100%)	$532,000
2020–2025	PI: Edward Kavazanjian; Co-PI: Zapata, C., Saenz, D., Garcia-Pichel, F., Shock, E., Allenby, B., Rittmann, B., Torres, C., Krajmalnik-Brown, R., Delgado, A., Vivoni, E., Neithalath, N., Cadillo-Quiroz, H., Boyer, T., van Paassen, L., Tao, J., Hamdan, N., Savenye, W. & Larson, J.. "Engineering Research Center for Bio-Mediated and Bio-Inspired Geotechnics (CBBG)". *National Science Foundation* (Tao's share: 5%)	$16,444,444
2018–2019	PI: Savas Kaya; Co-PI: Julian Tao, Munir Nazzal, Yilmaz Sozer and Ala Abbas. "Roadway Kinetic Energy Capture and Conversion". *The Ohio Department of Transportation* (Tao's share: 20%)	$30,284
2017–2018	PI: Qindan Huang; Co-PI: Julian Tao. "Evaluation of Effective Bridge Deck Repair Maintenance Methods". *The Ohio Department of Transportation* (Tao's share: 50%)	$50,000
2016–2018	PI: Julian Tao; "Use of Crushed Recycled Glass in the Construction of Local Roadways". *The Ohio Department of Transportation* (Tao's share: 100%)	$144,160
2016–2017	PI: Julian Tao; "Evaluation of Post Flooding Shoulder Reconditioning". *The Ohio Department of Transportation* (Tao's share: 100%)	$32,427
2014–2017	PI: Julian Tao; Co-PI: Robert Liang. "Performance Comparison of Abutment and Retaining Wall Drainage Systems". *The Ohio Department of Transportation* (Tao's share: 80%)	$285,000

2014–2015	PI: Julian Tao; Co-PI: Robert Liang. "Stabilization of Peat Deposits for Roadway Construction and Remediation". *The Ohio Department of Transportation* (Tao's share: 80%)	$65,889

Internal Funding

2019–	PI: Julian Tao; "Bio-inspired underground communication". *NSF ERC Center for Bio-mediated and Bio-inspired Geotechnics* (Tao's share: 100%)	$165,407
2019–	PI: Leon van Paassen; Co-PI: Julian Tao. "Bio-based Scour Countermeasures". *NSF ERC Center for Bio-mediated and Bio-inspired Geotechnics* (Tao's share: 50%)	$150,000
2016–2017	PI: Julian Tao; "Microbial Induced Calcite Precipitation as Erosion and Bridge Scour Countermeasure". *Summer Faculty Fellowship at The University of Akron* (Tao's share: 100%)	$10,000
2014–2014	PI: Julian Tao; Co-PI: Jiahua Zhu, Gunjin Yun. "Bio-inspired Piezo-electrochromic Full-field Strain Sensing by Multilayered Nanocomposites". *Biomimicry Research and Innovation Center Initiative Research Incentive Grant at The University of Akron* (Tao's share: 34%)	$10,000

Pending proposals

–	PI: Julian Tao; Co-PI: Hamidreza Marvi, Pablo Sobron, Kris Zacny, Philip Chu. "Burrowing Robot Network (BuRN) for Distributed Characterization of Icy Lunar Regolith". *National Aeronautics and Space Administration*	$2,000,000
–	PI: Julian Tao; Co-PI: Daniel Aukes, Hamidreza Marvi. "Push Self-burrowing Robot Technology to Maturation and Commercialization". *ASU FSE Strategic Interest Seed Funding Program*	$25,000