Junliang 'Julian' TAO

Curriculum Vitae

September 2021

School of Sustainable Engineering and the Built Environment
Center for Bio-mediated and Bio-inspired Geotechnics
Arizona State University
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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
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

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)

Publications (Select Journal Articles)

Legends:

(*)	Corresponding Author
Bold Font	Ph.D. Student for whom I am the primary advisor
Underline Font	Master's Student for whom I am the primary advisor or a co-advisor
(#)	Undergraduate Student
(∞)	Other/Visiting Student
(×)	Postdoctoral Researcher

1. J Tao. Burrowing Soft Robots Break New Ground. *Science Robotics* **6**(55) (2021). DOI: 10.1126/scirobotics.abj3615.
2. **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. DOI: 10.1002/aisy.201900183.
3. **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. DOI: 10.1007/s11440-020-00918-8.
4. 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. DOI: 10.1088/1748-3190/ab8754.
5. 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. DOI: 10.1061/(ASCE)GT.1943-5606.0002177.
6. 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. DOI: 10.1520/JTE20170517.

7. 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.
8. **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. DOI: 10.1061/(ASCE)GM.1943-5622.0000839.
9. **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. DOI: 10.1007/s11440-016-0516-y.
10. J Tao and X Yu[*]. Hair Flow Sensors: From Bio-Inspiration to Bio-Mimicking—a Review. *Smart Materials and Structures* **21**(11) (2012), 113001. DOI: 10.1088/0964-1726/21/11/113001.

Teaching

At ASU

Course	Term/Year	Credits	Enrollment	Evaluation
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

Outreach Activities

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

Select Service Activites

2021–2021	Panelist	SSEBE NSF CAREER proposal workshop *of* ASU
2020–	Committee Member	Curriculum Committee *of* CBBG
2018–	Committee Member	CESE Academic Affairs (Curriculum) Committee of School of Sustainable Engineering and the Built Environment *of* ASU
2018–	Faculty Volunteer	E2 Camp *of* ASU
2017–	Committee Member	Committee on Strategic Planning *of* International Association of Chinese Infrastructure Professionals (IACIP)
2017–	Chair for Award Sub-committee	Committee on Geotechnics of Soil Erosion *of* ASCE Geo-Institute
2016–2019	Committee Member	AFS40 Committee on Subsurface Soil-Structure Interaction *of* TRB
2015–	Committee Member	Committee on Engineering Geology and Site Characterization *of* ASCE Geo-Institute