

Yong Tang

GRADUATE RESEARCH ASSOCIATE

School of Sustainable Engineering and the Built Environment, Arizona State University

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Research Interests

Bio-inspired Geomechanics, Burrowing Mechanisms, soil-structure interactions

Education

Arizona State University

DOCTOR OF PHILOSOPHY, CIVIL, ENVIRONMENTAL AND SUSTAINABLE ENG PROGRAM

- Advisor: Dr. Junliang (Julian) Tao, Associate Professor
- GPA: 4.00/4.00

Tempe, AZ, USA

09/2018-present

Sichuan University

MASTER OF SCIENCE, GEOTECHNICAL ENGINEERING

- Advisor: Dr. Enlong Liu, Professor
- GPA: 3.6/4.0 (1/30)
- Thesis: mechanical properties of structured soils under different stress paths and investigation on its mesoscopic breakage mechanism

Chengdu, China

08/2014-06/2017

Sichuan University

BACHELOR OF AGRICULTURAL HYDRAULIC ENGINEERING

- GPA: 3.44/4.00 (1/86)

Chengdu, China

08/2010-06/2014

Research Program Participated

Career: Integrated Research and Education on Bio-Inspired Burrowing (NSF CAREER)

PI: DR. JUNLIANG (JULIAN) TAO

07/01/2017-06/30-2022

EAGER SitS: Active Self-Boring Robots That Enable Next Generation Dynamic Underground Wireless Sensing Networks: Fusion of Fast Prototyping, Modeling and Learning (NSF)

PI: DR. JUNLIANG (JULIAN) TAO, CO-PI: DR. HAMIDREZA MARVI, DR. DANIEL AUKES

01/01/2019-12/31/2020

Awards and Grants

ASU Individual Graduate and Professional Student Association (GPSA) Travel Grant

ASU GRADUATE & PROFESSIONAL STUDENT ASSOCIATION, GPSA TRAVEL GRANT PROGRAM (2021-2022)

01/30/2022

\$950

Graduate College Q3 Travel Award

ARIZONA STATE UNIVERSITY

01/03/2022

\$300

Geo-Congress 2021 GeoPoster top six finalists

ASCE G-I

05/10/2021

Geo-Congress 2020 GeoPoster travel grant

ASCE G-I

02/26/2020

\$350

The second Rank Academic Scholarship

SICHUAN UNIVERSITY

2014-2017

Graduation with honor

SICHUAN UNIVERSITY

2014

China National Scholarship

MINISTRY OF EDUCATION OF THE PEOPLE'S REPUBLIC OF CHINA

2012-2013

\$1500

The First Rank Academic Scholarship

SICHUAN UNIVERSITY

2012-2013

Honor Undergraduate Student of Sichuan University

SICHUAN UNIVERSITY

2012-2013

China National Scholarship

MINISTRY OF EDUCATION OF THE PEOPLE'S REPUBLIC OF CHINA

2011-2012

\$1500

The First Rank Academic Scholarship

SICHUAN UNIVERSITY

2011-2012

Honor Undergraduate Student of Sichuan University

SICHUAN UNIVERSITY

2010-2011

China National Endeavor Scholarship

SICHUAN UNIVERSITY

2010-2011

\$1000

Publications

PEER-REVIEWED JOURNAL PAPERS

TANG, Y., & Tao, J. (2022). Multiscale analysis of rotational penetration in shallow dry sand and implications for self-burrowing robot design. *Acta Geotechnica*. <https://doi.org/10.1007/s11440-022-01492-x>

Li, D., Huang, S., **TANG, Y.**, Marvi, H., Tao, J., & Aukes, D. M. (2021). Compliant Fins for Locomotion in Granular Media. *IEEE Robotics and Automation Letters*, 6(3), 5984–5991. <https://doi.org/10.1109/LRA.2021.3084877>

Tao, J. (Julian)., Huang, S., & **TANG, Y.** (2020). SBOR: A minimalistic soft self-burrowing-out robot inspired by razor clams. *Bioinspiration & Biomimetics*, 15(5), 055003. <https://doi.org/10.1088/1748-3190/ab8754>

Huang, S., **TANG, Y.**, Bagheri, H., Li, D., Ardente, A., Aukes, D., Marvi, H., & Tao, J. (Julian). (2020). Effects of Friction Anisotropy on Upward Burrowing Behavior of Soft Robots in Granular Materials. *Advanced Intelligent Systems*, 2(6), 1900183. <https://doi.org/10.1002/aisy.201900183>

Tao, J. “Julian”., Huang, S., & **TANG, Y.** (2019). Bioinspired Self-Burrowing-Out Robot in Dry Sand. *Journal of Geotechnical and Geoenvironmental Engineering*, 145(12), 2819002. [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002177](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002177)

PEER-REVIEWED CONFERENCE PROCEEDINGS

TANG, Y., & Julian Tao, J. (2021). Effect of Rotation on Penetration: Toward a Seed Awn-Inspired Self-Burrowing Probe. *IFCEE 2021*, 149–159. <https://doi.org/10.1061/9780784483428.016>

TANG, Y., Huang, S., & Tao, J. (2020). Effect of Rotation on Seeds' Self-Burial Process: Insights from DEM Simulations. *Geo-Congress 2020*, 293–301. <https://doi.org/10.1061/9780784482834.032>

WORK IN PROGRESS

TANG, Y., Zhong, Y., & Tao, J. (2022). *Experimental study on the reduction of the rotational penetration resistance.*

TANG, Y., Zhong, Y., & Tao, J. (2022). *Laboratory rotational penetration testing assisted by a six-axis robotic arm.*

Presentations and Posters

PRESENTATIONS

TANG, Y., & Tao, J. (2022, January). *Rotation of a slender body reduces burrowing forces in soil.* The society for integrative and comparative biology (SICB) (online).

TANG, Y., & Tao, J. (2021, May). *Multiscale analysis of bio-inspired rotational penetration in sand.* The international foundations congress & equipment expo (IFCEE) (online).

TANG, Y., & Tao, J. (2021, April). *Multiscale analysis of bio-inspired rotational penetration in sand.* Center for bio-mediated & bio-inspired geotechnics (CBBG) (online).

TANG, Y., Huang, S., Ardente, A., & Tao, J. (2020, October). *Effects of friction anisotropy on upward burrowing behavior of soft robots in granular materials.* Center for bio-mediated & bio-inspired geotechnics (CBBG) (online).

TANG, Y., & Tao, J. (2019, June). *Effect of rotation on seed's self-burial process: Insights from DEM simulations.* Engineering mechanics institute conference (EMI).

POSTERS

TANG, Y., & Tao, J. (2022, March). *Effect of rotational cone on penetration resistance and its implication to the design of a bio-inspired self-burrowing robots*. Geo-congress, poster presentation.

TANG, Y., & Tao, J. (2022, March). *Multiscale analysis of rotational penetration in shallow dry sand and implications for self-burrowing robot design*. Geo-congress, geo-poster competition.

TANG, Y., Huang, S., Ardente, A., & Tao, J. (2021, February). *Effects of friction anisotropy on upward burrowing behavior of soft robots in granular materials*. SSEBE, 11th annual graduate poster symposium (online).

TANG, Y., Huang, S., Ardente, A., & Tao, J. (2020, April). *Effects of friction anisotropy on upward burrowing behavior of soft robots in granular materials*. Center for bio-mediated & bio-inspired geotechnics (CBBG) (online).

TANG, Y., Huang, S., Li, D., Bagheri, H., Ardente, A., Marvi, H., Aukes, D., & Tao, J. (2020, April). *Self-burrowing robot inspired by nature*. Center for bio-mediated & bio-inspired geotechnics (CBBG) (online).

TANG, Y., & Tao, J. (2020, February). *Effect of rotation on seed's self-burial process: Insights from DEM simulations*. Geo-congress, geo-poster competition.

TANG, Y., & Tao, J. (2019, October). *Effect of rotation on seed's self-burial process: Insights from DEM simulations*. Center for bio-mediated & bio-inspired geotechnics (CBBG).

TANG, Y., Huang, S., & Tao, J. (2019, February). *Inspirations for self-boring robots: Diverse, divergent and convergent limbless burrowing traits*. SSEBE, 9th annual graduate poster symposium.

TANG, Y., Huang, S., & Tao, J. (2018, October). *Inspirations for self-boring robots: Diverse, divergent and convergent limbless burrowing traits*. Center for bio-mediated & bio-inspired geotechnics (CBBG).

Teaching and Mentoring

MENTORING

SCIB mentoring program, Society for Integrative and Comparative Biology (SICB)

01/2022

MENTOR: DR. KELLY DORGAN

- Career path development, Postdoc experience

Vertically Integrated Program (V.I.P), Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

08/2021 - present

MENTEE: MOHAN PAREKH

- knowledge about the soil mechanics and Arduino, conducting the rotational penetration tests, rapid prototype design

CBBG summer YSP PROGRAM, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

06/2021 - 07/2021

MENTEE: JANNETTE MARTÍ-SUBIRANA

- Knowledge about UR robotic arm and soil mechanics, conducting the rotational penetration tests, data analysis, rapid prototype design

Vertically Integrated Program (V.I.P), Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

01/2019 - 05/2019

MENTEE: AMANDA CLARKE AND BRANDON GRIMES

- Basic knowledge about the soil mechanics and Arduino, conducting the burrowing out tests, data analysis.

CBBG summer REU PROGRAM, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

09/2016 - 12/2016

MENTEE: HOLDEN, KHEM AND DAGES, STEPHEN

- Basic knowledge of soil mechanics and Arduino

Service

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

02/2022

OPEN DOOR ACTIVITY

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

11/2021

HOMEcomings BLOCK PARTY

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

HOMEcomings BLOCK PARTY

11/2019

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

ASU COMPUPower SRE LAB TOURS

06/2019

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

OPEN DOOR ACTIVITY

02/2019

ASU, Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

HOMEcomings BLOCK PARTY

11/2018

References

Junliang (Julian) Tao, Ph.D.

julian.tao@asu.edu

ASSOCIATE PROFESSOR IN THE SCHOOL OF SUSTAINABLE ENGINEERING AND THE BUILT ENVIRONMENT AT ARIZONA STATE

UNIVERSITY