

Yida Zhang

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EDUCATION

- Northwestern University, Evanston, IL (9/12-7/16): Ph.D. in Civil and Environmental Engineering, Geotechnical Engineering concentration.
- Louisiana State University, Baton Rouge, LA (9/10-8/12): M.S. in Civil and Environmental Engineering, Geotechnical Engineering concentration.
- Zhejiang University, Hangzhou, China (7/06-7/10): B.S. in Civil and Environmental Engineering, Geotechnical Engineering concentration.

ACADEMIC APPOINTMENTS

- Assistant Professor (8/16 – present): Department of Civil, Environmental, and Architectural Eng., Geotechnical Engineering and Geomechanics, University of Colorado Boulder, Boulder, CO.
- Doctoral Researcher (9/12 – 7/16): Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL.

AWARDS

- Early Career Research Award (2022). Department of Civil, Environmental, and Architectural Eng., University of Colorado Boulder, Boulder, CO.
- Future Leaders (2021). American Rock Mechanics Association (ARMA)
- Terminal Year Fellowship (9/15 – 7/16). Northwestern University, Evanston, IL.
- Water P. Murphy Fellowship (9/12 – 9/13). Northwestern University, Evanston, IL.

PUBLICATIONS

Refereed journal articles published

- [J1]. Nakagawa*, S, **Zhang, Y.**, Eskandari-Ghadi†, M., Vasco, D.W. (2022) Corrections of Double-Torsion (DT) subcritical crack growth tests for crack profile geometry. *Theoretical and Applied Fracture Mechanics* 124, 103752, DOI: 10.1016/j.tafmec.2023.103752.
- [J2]. Eskandari-Ghadi, M.†, Hang, D., Nakagawa, S., Pride, S., Gilbert, B., **Zhang, Y.*** (2022) The role of surface forces in environment-enhanced cracking of brittle solids. *Journal of Mechanics and Physics of Solids*. 172, p.105162, DOI: 10.1016/j.jmps.2022.105162
- [J3]. Hu, Z.‡, Li, J., **Zhang, Y.***, Yang, Z.X., Liu, J. (2022) A CFD-DEM study on the suffusion and shear behaviors of gap-graded soils under stress anisotropy. *Acta Geotechnica*. Accepted. DOI: 10.1007/s11440-022-01755-7

* Corresponding author

† Primary graduate student advisee

‡ Visiting PhD advisee

§ Visiting research scholar

** Secondary graduate student advisee

†† Primary post-doc advisee

- [J4]. Hu, Z.[‡], Yang, Z.X., Guo, N.^{*}, **Zhang, Y.** (2022) Multiscale modeling of seepage-induced suffusion and slope failure using a coupled FEM–DEM approach, *Computer Methods in Applied Mechanics and Engineering* **398**, p. 115177, DOI: 10.1016/j.cma.2022.115177
- [J5]. Sisodiya, M.[†], **Zhang, Y.**^{*} (2022) A directional microcrack damage theory for brittle solids based on continuous hyperplasticity. *International Journal of Damage Mechanics* **31**(9), 1320-1348, DOI:10.1177/10567895221095890
- [J6]. Eskandari-Ghadi, M.[†], **Zhang, Y.**^{*} (2022) Effect of pore size distribution on sorption-induced deformation of porous materials: A theoretical study. *International Journal of Solid and Structures* **242**. 111533, DOI: 10.1016/j.ijsolstr.2022.111533.
- [J7]. Wen, Y.[†], **Zhang, Y.**^{*} (2022) Fabric-void ratio relation for granular materials. *Acta Geotechnica* **17**, 4297–4312, DOI: 10.1007/s11440-022-01507-7.
- [J8]. Li, Z., Liao, Y., Zhang, Y., **Zhang, Y.**, Xia, W.^{*} (2021) Microstructure and dynamics of nanocellulose films: Insights into the deformational behavior. *Extreme Mechanics Letters* **50**, p.101519, DOI: 10.1016/j.eml.2021.101519.
- [J9]. Sisodiya, M.[†], **Zhang, Y.**^{*} (2021) A rate-dependent directional damage theory for brittle rocks considering the kinetics of microcrack growth. *Rock Mechanics and Rock Engineering* **55**(5), 2693–2710, DOI: 10.1007/s00603-021-02577-x.
- [J10]. Singh, S.[†], Zurakowski, Z., Dai, S., **Zhang, Y.**^{*} (2021) Effect of grain crushing on hydraulic conductivity of tailings sand. *Journal of Geotechnical and Geoenvironmental Engineering* **147**(12), DOI: 10.1061/(ASCE)GT.1943-5606.0002667.
- [J11]. Wen, Y.[†], **Zhang, Y.**^{*} (2021) Evidence of a Unique Critical Fabric Surface for Granular Soils. *Géotechnique*, published online, DOI: 10.1680/jgeot.21.00126.
- [J12]. Sisodiya, M.[†], Singh, S.[†], Thomas, D., **Zhang, Y.**^{*} (2021) Effect of water-rock interaction on the axial capacity of drilled caissons socketed in claystone bedrock. *Journal of Geotechnical and Geoenvironmental Engineering* **147**(10), 04021097-1. DOI: 10.1061/(ASCE)GT.1943-5606.0002600.
- [J13]. Eskandari-Ghadi, M.[†], **Zhang, Y.**^{*} (2021) Mechanics of shrinkage-swelling transition of microporous materials at the initial stage of adsorption. *International Journal of Solids and Structures* **222**, p.111041, DOI: 10.1016/j.ijsolstr.2021.111041.
- [J14]. Zhou, X.[†], Liu, S., **Zhang, Y.**^{*} (2021) Permeability Evolution of Fractured Sorptive Geomaterials: A Theoretical Study on Coalbed Methane Reservoir. *Rock Mechanics and Rock Engineering* **54**(7), 3507-3525. DOI: 10.1007/s00603-021-02404-3.
- [J15]. Hu, Z.[‡], Yang, Z.X.^{*}, **Zhang, Y.** (2020) CFD-DEM modeling of suffusion effect on undrained behavior of internally unstable soils. *Computers and Geotechnics* **126**, 103692, DOI: 10.1016/j.compgeo.2020.103692.
- [J16]. Hu, Z.[‡], **Zhang, Y.**^{*}, Yang, Z.X. (2019) Suffusion-induced evolution of mechanical and microstructural properties of gap-graded soils using CFD-DEM. *Journal of Geotechnical and Geoenvironmental Engineering* **146**(5), 04020024, DOI: 10.1061/(ASCE)GT.1943-5606.0002245.
- [J17]. **Zhang, Y.**^{*}, Zhou, X.[†], Wen, Y.[†] (2019) A constitutive theory for sand based on the concept of critical fabric surface. *Journal of Engineering Mechanics* **146**(4), 04020019, DOI: 10.1061/(ASCE)EM.1943-7889.0001741.
- [J18]. Kim, J., **Zhang, Y.**, Seol, Y, Dai, S.^{*} (2019) Particle crushing in hydrate-bearing sands. *Geomechanics for Energy and the Environment* **23**, 100133, DOI: 10.1016/j.gete.2019.100133.
- [J19]. Hu, Z.[‡], **Zhang, Y.**^{*}, Yang, Z.X., (2019) Suffusion-induced deformation and microstructural change of granular soils: a coupled CFD-DEM study. *Acta Geotechnica* **14**(3), 795-814.
- [J20]. **Zhang, Y.**^{*} (2018). Mechanics of adsorption-deformation coupling in porous media. *Journal of the Mechanics and Physics of Solids* **114**, 31-54.

- [J21]. Zhou, X.[†], Ma, G.[§], **Zhang, Y.*** (2019). Grain size and time effect on the deformation of rockfill dams: a case study on the Shuibuya CFRD. *Géotechnique* **69**(7), 606-619, DOI: 10.1680/jgeot.17.P.299
- [J22]. Ma, G.[§], Zhou, W., **Zhang, Y.**, Wang, Q., Chang, X. (2017). Fractal behavior and shape characteristics of fragments produced by the impact of quasi-brittle spheres. *Powder Technology* **325**, 498-509.
- [J23]. Ma, G.[§], **Zhang, Y.**, Zhou, W., Ng, T.T., Wang, Q., Chen, X. (2017). The effect of different fracture mechanisms on impact fragmentation of brittle heterogeneous solid. *International Journal of Impact Engineering* **113**, 132-143.
- [J24]. **Zhang, Y.D.**, Buscarnera, G.* (2017). Breakage mechanics for granular materials in surface-reactive environments. *Journal of the Mechanics and Physics of Solids* **112**, 89-108.
- [J25]. Sohn, C., **Zhang, Y.D.**, Cil, M., Buscarnera, G.* (2017) Experimental assessment of continuum breakage models accounting for mechanical interactions at particle contacts. *Granular Matter* **19**(4), 67.
- [J26]. **Zhang, Y.D.**, Buscarnera, G.* (2017). A rate-dependent breakage model based on the kinetics of crack growth at the grain scale. *Géotechnique* **67**(11), 953-967.
- [J27]. Gao, S., **Zhang, Y.D.**, Sonta, A., Buscarnera, G.* (2016). Evolution of water retention characteristics of granular material subjected to grain crushing. *Journal of Geotechnical and Geoenvironmental Engineering* **142** (9), 06016006.
- [J28]. **Zhang, Y.D.**, Buscarnera, G.* , Einav, I. (2016). Grainsize dependence of yielding in granular soils interpreted using fracture mechanics, breakage mechanics, and Weibull statistics. *Géotechnique* **66**(2), 149-160.
- [J29]. **Zhang, Y.D.**, Buscarnera, G.* (2015). Implicit Integration under Mixed Controls of a Breakage Model for Unsaturated Crushable Soils. *International Journal for Numerical and Analytical Methods in Geomechanics* **40** (6). 887-918.
- [J30]. **Zhang, Y.D.**, Buscarnera, G.* (2015). Prediction of breakage-induced couplings in unsaturated granular soils. *Géotechnique* **65**(2), 135-140.
- [J31]. **Zhang, Y.D.**, Buscarnera, G.* (2014). Grainsize dependence of elastic yielding in unsaturated granular soils. *Granular Matter* **16**(4), 469-483.
- [J32]. Voyiadjis, G.Z.* , Faghihi, D., **Zhang, Y.D.** (2014). A theory for grain boundaries with strain-gradient plasticity. *International Journal of Solids and Structures* **51**, 1872-1889.

Book chapters

- [B1]. **Zhang Y.***, Buscarnera G. (2018). *Energetics of Crushable Granular Materials: from Particle Fracture to Breakage Mechanics*. In book: *Energetical Methods in Geomechanics*, ALERT Doctoral School, Aussois, France.

Peer-reviewed conference/ workshop proceedings papers

- [C1]. Sisodiya, M.[†], **Zhang, Y.*** (2021) A directional micro-crack damage theory for rate-dependent deformation and failure of brittle rocks. In *55th US Rock Mechanics/Geomechanics Symposium*, Houston, TX (Virtual).
- [C2]. Zhou, X.[†], Liu, S., **Zhang, Y.*** (2021) Predicting permeability change of fractured coals during methane depletion. In *55th US Rock Mechanics/Geomechanics Symposium*, Houston, TX (Virtual).
- [C3]. Singh, S.[†], Sisodiya, M.[†], **Zhang, Y.*** (2020) Interaction between fine-grained bedrock and water during caisson construction and its effect on the axial bearing capacity. In *54th US Rock Mechanics/Geomechanics Symposium*, Golden, CO (Canceled).
- [C4]. Sisodiya, M.[†], **Zhang, Y.*** (2020) A thermodynamic-consistent micro-crack damage model for brittle rocks. In *54th US Rock Mechanics/Geomechanics Symposium*, Golden, CO.

- [C5]. **Zhang, Y.*** (2019). Thermodynamic-consistent adsorption-swelling models for coal. In *53rd US Rock Mechanics/Geomechanics Symposium*, New York City, NY.
- [C6]. Zhou, X.[†], **Zhang, Y.***, Ma, G.[§] (2019). Deformation analysis of the 233 m Shuibuya rockfill dam using breakage mechanics. In *Geo-Congress 2019*, Philadelphia, PA.
- [C7]. Zhou, X.[†], Ma, G.[§], **Zhang, Y.*** (2018). Settlement analysis of the Shuibuya rockfill dam using breakage mechanics. In *52th US Rock Mechanics/Geomechanics Symposium*, Seattle, WA.
- [C8]. Hu, Z.[‡], Yang, Z.X., **Zhang, Y.*** (2018). Suffusion-induced deformation and microstructural change of granular soils: a CFD-DEM coupling perspective. In *IS-Atlanta 2018*, Geomechanics from Micro to Macro in Research and Practice, Atlanta, GA.
- [C9]. **Zhang, Y.D.***, Park J.S.[†], Gao S.^{**}, Sonta A., Horin B., Buscarnera G. (2017) Effect of grain crushing and grain size on the evolution of water retention curves. In *PanAm UNSAT*, Dallas, TX.
- [C10]. **Zhang, Y. D.***, Buscarnera, G. (2017). Creep of unconsolidated sand due to delayed grain breakage. In *51st US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA
- [C11]. Marinelli, F.^{*}, **Zhang, Y.D.**, Buscarnera, G. (2017) Compaction localization in granular rocks: modeling grain-size effects. In *51th US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA
- [C12]. **Zhang, Y. D.***, Buscarnera, G. (2015). Constitutive couplings in unsaturated granular media with crushable grains. In *49th US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA.
- [C13]. **Zhang, Y. D.***, Buscarnera, G. (2014). Model predictions of hydro-mechanical coupling in unsaturated crushable soils. In *Unsaturated Soils: Research & Applications*, CRC Press, 471-477.

Reports and Theses

- [R1]. **Zhang, Y.***, Newell, P., Xi, Y., Tyrrell, A.[†], Sisodiya, M.[†], Zhou, X.[†], Wang, Y.^{††}, Wang, Y., Vazic, B. (2022) Time-dependent THMC properties and microstructural evolution of damaged rocks in excavation damage zone. Final technical report submitted to *U.S. Department of Energy – Nuclear Energy University Program*.
- [R2]. Sisodiya, M.[†], Singh, S.[†], **Zhang, Y.***, Pak, R. (2019). Caisson drilling fluid interaction with fine grained bedrock. Technical report submitted to *Colorado Department of Transportation*.
- [R3]. **Zhang, Y.D.*** (2016) *Effect of water particle interactions on the crushing of granular materials*, Ph.D. Thesis, Department of Civil and Environmental Engineering, Northwestern University, advisor: Giuseppe Buscarnera.
- [R4]. **Zhang, Y.D.*** (2012) *Numerical study of laterally loaded batter pile groups with the application of anisotropic modified Cam-Clay model*, M.S. Thesis, Department of Civil and Environmental Engineering, Louisiana State University, advisor: Murad Abu-Farsakh.

PRESENTATIONS

Invited talks

- [1]. November 2022, The hidden role of surface forces in the mechanics of porous and granular materials, *Johns Hopkins University*, Baltimore, MD.
- [2]. November 2022, The hidden role of surface forces in the mechanics of porous materials, *Stanford University*, Stanford, CA.
- [3]. October 2022, The hidden role of surface forces in the mechanics of porous geomaterials, *Duke University*, Durham, NC.
- [4]. February 2022, The hidden role of surface forces in the mechanics of geomaterials, *Northwestern University*, Evanston, IL.
- [5]. September 2021, Adsorption-deformation coupling in meso- and microporous geomaterials: theory and applications, *Colorado School of Mines*, Golden, CO.

- [6]. November 2019, The hidden role of surface forces on the mechanics of geomaterials, *Lawrence Berkeley National Laboratory*, Berkeley, CA.
- [7]. March 2019, Mechanics of adsorption-deformation coupling in porous media, *University of Wyoming*, Laramie, WY.
- [8]. October 2018, Energetics of crushable granular materials – from particle fracture to breakage mechanics, *ALERT Doctoral School 2018*, Aussois, France.
- [9]. July 2018, Application of thermodynamic principles in modeling crushable granular materials under multiphysical loadings, *China University of Petroleum*, Beijing, China.
- [10]. July 2018, Application of thermodynamic principles in modeling crushable granular materials under multiphysical loadings, *Cold & Arid Regions Environmental and Engineering Research Institute*, Lanzhou, China.
- [11]. May 2018, Time and scaling effect on rockfill dams, *IULEE workshop*, Boulder, CO.
- [12]. May 2018, Hydromechanical aspect of grain breakage: testing, modeling, and application, *Stantec*, Denver, CO.
- [13]. April 2018, Effect of evolving grain size on the hydromechanical properties of granular soils, *Knight Piésold*, Denver, CO.
- [14]. March 2018, Time and scaling effect on rockfill dams: a case study on the Shuibuya CFRD, *U.S. Bureau of Reclamation*, Lakewood, CO.
- [15]. November 2017, Modeling breakage of rockfills and its implication on the settlement behavior of large concrete face rockfill dams, *University of Texas at Arlington*, Arlington, TX.
- [16]. March 2017, Water-particle interaction and rate effect in crushing of granular materials, *Colorado School of Mine*, Golden, CO.
- [17]. March 2016, Effect of water-particle interactions on the crushing of granular materials, *University of Colorado Boulder*, Boulder, CO.
- [18]. January 2016, Effect of water-particle interactions on the crushing of granular materials, *Pennsylvania State University*, State College, PA.

Conference presentations

- [1]. June 2022, A surface-force based fracture theory for subcritical crack growth in brittle materials, *EMI 2022*, Baltimore, MD.
- [2]. April 2022, Unique critical fabric surface for granular soils: DEM evidence and constitutive modelling, *18th European Mechanics of Materials Conference*, Oxford, UK.
- [3]. June 2021, A multiscale theory explaining the initial shrinkage of microporous materials upon adsorption, *Biot-Bazant conference (virtual)*, Evanston, IL.
- [4]. June 2019, Critical fabric-based constitutive modeling of granular soils, *EMI 2019*, Pasadena, CA.
- [5]. June 2019, Mechanistic adsorption-swelling models for coal subjected to CO₂ injection, *ARMA 2019*, New York, NY.
- [6]. March 2019, Deformation analysis of the 233 m Shuibuya rockfill dam using breakage mechanics, *Geo-Congress 2019*, Philadelphia, PA.
- [7]. June 2018, Settlement analysis of the Shuibuya Rockfill dam using breakage mechanics, *ARMA 2018*, Seattle, WA.
- [8]. May 2018, Thermodynamics of adsorption-deformation coupling in porous media, *EMI 2018*, Boston, MA.
- [9]. June 2017, Creep of unconsolidated sand due to delayed grain breakage, *ARMA 2017*, San Francisco, CA.
- [10]. June 2017, Enhanced grain breakage in surface-reactive environments, *EMI 2017*, San Diego, CA.

- [11]. May 2016, Grain size effect in the comminution of granular materials, *EMI 2016*, Nashville, TN.
- [12]. June 2015, Constitutive couplings in unsaturated granular media with crushable grains, *ARMA 2015*, San Francisco, CA.
- [13]. June 2014, Computational aspects of a hydro-mechanical model for crushable granular soils, *USNCTAM 2014*, East Lansing, MI.
- [14]. August 2013, Understanding hydro-mechanical coupling in brittle unsaturated granular matter, *EMI 2013*, Evanston, IL.

Conference presentations by primary advisees

- [1]. June 2022, Relation between Void Ratio and Contact Fabric of Granular Soils. Wen, Y. (presenter), Zhang, Y. *EMI 2022*, Baltimore, MD.
- [2]. July 2021, Numerical integration of a novel directional damage model for rate-dependent behavior of brittle rocks. Sisodiya, M. (presenter), Zhang, Y. *USNCCM 2021* (virtual).
- [3]. May 2021, Evidence of a unique critical fabric surface for granular soils. Eskandari-Ghadi, M. (presenter), Zhang, Y. *EMI 2021* (virtual), New York, NY.
- [4]. May 2021, Initial shrinkage of microporous solid upon gas adsorption. Wen, Y. (presenter), Zhang, Y. *EMI 2021* (virtual), New York, NY.
- [5]. June 2021, A directional micro-crack damage theory for rate-dependent deformation and failure of brittle rocks. Sisodiya, M. (presenter), Zhang, Y. *ARMA 2021* (virtual), Houston, TX.
- [6]. June 2021, Predicting permeability change of fractured coals during methane depletion. Zhou, X. (presenter), Zhang, Y. *ARMA 2021* (virtual), Houston, TX.
- [7]. June 2019, A microcrack damage model using directional distribution density for anisotropic damage. Sisodiya, M. (presenter), Liu, S., Zhang, Y. *EMI 2019*, Pasadena, CA.
- [8]. Sept. 2018, Suffusion-induced deformation and microstructural change of granular soils: a CFD-DEM coupling perspective. Hu, Z. (presenter), Yang, Z.X., Zhang, Y. *IS-Atlanta 2018*, Atlanta, GA.
- [9]. Nov. 2017, Effect of grain crushing and grain size on the evolution of water retention curves. Park, J.S. (presenter), Zhang, Y. *PanAM Unsaturated Soils 2017*, Dallas, TX.

Conference posters

- [1]. May 2021, Effect of pore size distribution on sorption-induced deformation of porous materials. Eskandari-Ghadi, M. (presenter), Zhang, Y. *EMI 2021* (virtual), New York, NY.
- [2]. April 2019, Effect of fluid-rock interaction on the strength of Denver claystone. Singh, S. (presenter), Sisodiya, M., Xu, H., Zhang, Y., Pak, R. *CAGE University Gala*, Golden, CO.
- [3]. April 2018, Effect of placement condition on the hydromechanical behavior of overexcavation fills. Sisodiya, M. (presenter), Zhang, Y. *CAGE University Gala*, Golden, CO.
- [4]. November 2016, The application of breakage mechanics model on Shuibuya Concrete-Face Rockfill Dam, Zhou X. (presenter), Ma, G., Zhang, Y., *Rocky Mountain GeoConference 2016*, Golden, CO.

FUNDED RESEARCH PROJECTS

Received as PI

- NSF-CMMI 2113474 *Collaborative Research: Multiscale Mechanics of Adsorption-Deformation Coupling in Soft Nanoporous Materials*. Sponsor: National Science Foundation. Sole PI: Y. Zhang. 12/1/2021 – 11/30/2024. Award amount: \$ 293,104.
- Subcontract NO. 7556334 *Surface Forces in Subcritical Crack Growth and Healing*. Sponsor: Lawrence Berkeley National Laboratory. Sole PI: Y. Zhang.

Phase-I 10/1/2020-9/30/2021. Award amount: \$90,000.

Phase-II 1/1/2022-12/31/2022. Award amount: \$118,704.

- DE-NE0008771 *Time-dependent THMC properties and microstructural evolution of damaged rocks in excavation damage zone*. Sponsor: U.S. Department of Energy-NEUP. PI: Y. Zhang; Co-PI: Y. Xi, P. Newell. 10/1/2018 - 9/30/2022. Award amount: \$789,178. My approx. share: \$549,195; U of Utah \$239,983.
- R2.40 *Caisson Drilling Fluid Interaction with Fine Grained Bedrock*. Sponsor: Colorado Department of Transportation. PI: Y. Zhang; Co-PI: R. Pak. 3/1/2018 - 5/30/2019. Award amount: \$75,000. My approx. share: \$70,000.
- Industrial grant *Grain crushing, creep, and permeability evolution of tailings sand from the Cerro Verde mine*. Sponsor: Stantec Inc. Sole PI: Y. Zhang.
Phase-I 12/1/2018-3/31/2019. Award amount: \$14,900.
Phase-II 8/1/2020-12/31/2020. Award amount: \$19,480.
Phase-III 3/22/2021-7/15/2021. Award amount: \$4,200.
- WEN-IRT Seed Grant *Fracking soils: towards an engineered delivery method for environmental remediation and soil modification*. Sponsor: CUBoulder. Sole PI: Y. Zhang. 3/1/2018 to 12/31/2019. Award amount: \$7,920.

Received as Co-PI / Senior Person

- DE-FOA-0002068 *Center for micromorphic multiphysics porous and particulate materials simulations within exascale computing workflows*, Sponsor: ASC-NNSA-DOE. PI: R. Regueiro; Co-PI: J. Brown, A. Clarke, A. Doostan, H. Tufo. 7/1/2020 - 6/30/2025. Award amount: \$13,159,200. My approx. share: \$550,000.

PARTICIPATION IN PROFESSIONAL WORKSHOPS

- LEAP Introductory Leadership Workshop (January 2020). Selected to participate in the Introductory Leadership Workshop. Hosted by CUBoulder, Boulder, CO.
- 2nd USUCGER Career Workshop for Junior Geotechnical Faculty (May 2018). Selected to participate in the Career Workshop. Hosted by Case Western Reserve University, Cleveland, OH.

STUDENT/RESEARCH ADVISING (primary advisor)

Current PhD students

- Hooman Dadras, *Subcritical Crack Growth and Macroscopic Failure of Carbonates in Aqueous Environments*, May. 2022 – present.
- Mohammadali Behboodi, *Multiscale Mechanics of Adsorption-Deformation Coupling in Soft Nanoporous Materials*, Jan. 2022 – present.
- Yazeed Kokash, *Thermo-mechanical behavior of plastically bonded granular materials*, July.2022 – present.

Past PhD students

- Yuxuan Wen, *Fabric Structure of Jammed and Unjammed Granular Soils*. Sept.2018 – Dec. 2022.
- Mitul Sisodiya, *Continuum damage mechanics based on directional damage distribution*. Sept. 2017 – Dec. 2021.
- Mehdi Eskandari-Ghadi, *Effect of surface forces on the mechanics of sorption-deformation in microporous media and environment-assisted crack growth in brittle solids*. June 2019 – Dec. 2021.

- Xiang Zhou, *Numerical modeling of granular materials and multiphysical processes in porous Media*. Sept. 2016 – June 2021.

Post-Doctoral researchers

- Mehdi Eskandari-Ghadi, Jan. 2022 – present.
- Yao Wang, Jan. 2020 – Sept. 2021.
- Mohamed Ab Abdelrahman, July. 2019 – Jan. 2020.

MS students

¹ MS thesis option ² MS report option

- Wanqi Yu¹, *Fabric evolution of granular soils during cyclic loading*. May 2021 – present.
- Andrea Tyrrell¹, *Thermo-mechanical response of Mancos shale*. Jan. 2021 – July. 2022.
- Shubjot Singh¹, *Grain crushing and permeability reduction for tailing underflow materials*. Sept. 2018 – Aug. 2020.
- Nishanthi Perera², *Infiltration Design: SR 90 Phase 3 Dispersion Areas Project*, Jan. 2019 – Dec. 2019.
- Haonan Xu², *Capacity reduction of drilled caissons due to water infiltration in claystone bedrocks*, Sept. 2018 – Aug. 2019.
- Joon Soo Park¹, *Experimental investigation on grain crushing under isotropic conditions*, Sept. 2016 – May 2018.
- Andrew Joseph Philpott², *A Novel Soil Column Apparatus for Studying Unsaturated Flow During Gas Burst*. Sept. 2016 – May 2018.
- Rebecca Scheetz¹, *Numerical Simulations of Two-Phase Flow in Rigid Porous Media*, Jan. 2017 – July 2017.

Undergraduate student research advising

- Tao Wang, Jan. 2018 – May 2018.
- Trinity Payne, Jan. 2019 – May 2019.
- Noah Traynor, Jan. 2019 – May 2019.

Visiting PhD students and research scholars

- Zheng Hu, visiting PhD student, Zhejiang University. *Numerical study of soil erosion using the coupled CFD-DEM technique*. Aug. 2017 – Aug. 2018.
- Dayan Wang, visiting scholar, Cold & Arid Regions Environmental and Engineering Research Institute. *Experimental characterization of water migration during soil freezing*. Aug. 2017 – Aug. 2020.

THESIS DEFENSE & EXAM COMMITTEES (not primary advisor)

PhD students

- Thesis defense: (2022) Tingting Xu (Georgia Tech) (2021) Bach Pham (CU Denver), (2020) Yige Zhang, Ryan Haagenson, (2019) Yao Wang, Mohamed Abdelrahman, Brian Volmer (CU Denver), Mahir Badanagki, (2018) Xiaoyong Bai, (2017) Juan Carlos
- Comprehensive exam: (2020) Tingting Xu (Georgia Tech), (2019) Ryan Haagenson, Bach Pham (CU Denver) (2018) Mahir Badanagki, (2016) Xiaoyong Bai

MS students

- Exam: (2022) Basil Alsharari, (2021) Joshua Hughes, (2020) Erin Nebel, (2019) Nishanthi Perera, Sobhan Bhattacharya, (2017) Peirce Jarrel

INSTITUTIONAL AND SCHOLARLY SERVICE

CUBoulder Department of Civil, Environmental, and Architectural Engineering

- Departmental JEDI Committee Member (2/21 – 5/22)
- Curriculum Committee Member (9/20 – present)
- Coordinator of the undergraduate and graduate Geotechnical laboratories (12/18 – present)
- Leader of the High-Pressure Thermal Triaxial MTS device upgrading project
 - Phase I: controller development and basic triaxial testing functionality (10/18 – 12/20)
 - Phase II: controller upgrade and advanced thermal triaxial functionality (02/22 – present)
- Geotechnical Engineering and Geomechanics seminar series (Lead 1/19 – 3/20, co-organize 9/21 – present)
- Faculty advisor of the Engineering Excellence Fund at CUBoulder (9/20 – present)
- Faculty advisor of the ASCE Geo-Institute Student Chapter (9/20 – present)
- Search Committee Member for the Geotechnical Engineering tenure-track faculty (8/18 – 4/19)
- Graduate Committee Member (9/17 – 9/20)
- Member of the Geotechnical Engineering Joint Evaluation Committee (JEC) (9/16 – 6/17)
- Fundamentals in Engineering (FE) Exam review (10/16, 10/17, 9/18, 9/19, 9/20, 9/21, 9/22)
- Geotechnical engineering preliminary exam (5/17, 12/17, 5/18, 5/19, 5/20, 5/21)
- Organization of the Jack Hilf Lecture (Lead 10/17, co-organize 10/18)
- Search committee member for the structural and geotechnical lab manager (4/17)

Scholarly organizations

- *Poromechanics* committee of the Engineering Mechanics Institute (EMI) of ASCE: Vice Chair (12/21 – present), Member (5/21 – present).
- *Granular materials* committee of the Engineering Mechanics Institute (EMI) of ASCE: Member (6/17 – present)
- *Modeling Inelasticity and Multiscale Behavior* of the EMI of ASCE: Member (5/18 – present)
- *Unsaturated Soils* committee of the Geo-Institute of the American Society of Civil Engineers (ASCE): Member (9/16 – present)
- *Underground Storage and Utilization* committee of the ARMA: Member (7/20 – Present)
- Editorial Board Member of *Géotechnique Letters* (9/18 – present)
- Conference Session Chair
 - *Mechanics and Physics of Granular Materials*, with Payam Poorsholhjouy and Marcial Gonzalez, EMI 2023, Atlanta, GA, June 2023.
 - *Swelling and shrinking porous media*, with Daniel Markle, Chris MacMinn, Sridhar Ranganathan, and Yihuai Zhang, InterPore 2023, Edinburgh, Scotland, May 2023.
 - *Experiment, modelling, and machine Learning applications in geomechanics*, with Gabriel Walton, ARMA 2021, Houston, TX, June 2021 (virtual).
 - *Numerical Modeling in Rock Mechanics focused on Civil Engineering Projects*, with Xiaoyu Song, ARMA 2020, Golden, CO, June 2020 (virtual).
 - *Multiscale geomechanics*, with Jesse Hampton, ARMA 2019, New York, NY, June 2019.
 - *Numerical Modeling of Civil Rock Engineering Projects*, with Seunghee Kim, ARMA 2018, Seattle, WA, June 2018.

- Conference Track lead
 - *Interdisciplinary Track*, ARMA 2021, Houston, TX. June 2021 (virtual).
 - *Special Topics*, with Michelle Lee Barry and Marco Salviato, EMI 2019, Pasadena, CA, June 2019.
- Proposal review

National Science Foundation (NSF) - Geotechnical Engineering and Materials, NSF- Fluid Dynamics, NSF - Geophysics, NSF - Particulate & Multiphase Process, NSF - Major Research Instrumentation, U.S. Department of Energy (DOE)- Basic Energy Sciences (BES) - Geosciences Program, DOE-Nuclear Energy University Program (NEUP), DOE- Energy Frontier Research Centers (EFRC), American Chemical Society (ACS) Petroleum Research Fund (PRF), Hong Kong Research Grants Council (RGC).
- Journal article review

Journal of Mechanics and Physics of Solids, Journal of Engineering Mechanics, Journal of Geophysical Research: Solid Earth, Geophysical Research Letters, Fuel, Géotechnique, Journal of Geotechnical and Geoenvironmental Engineering, International Journal of Rock Mechanics and Mining Sciences, International Journal for Numerical and Analytical Methods in Geomechanics, Rock Mechanics and Rock Engineering, Engineering Fracture Mechanics, Computers and Geotechnics, Granular Matter, Journal of Infrastructure Systems, Geotechnical Testing Journal, International Journal of Damage Mechanics, Engineering Geology, Geomechanics for Energy and the Environment, Mechanics Research Communications, Journal of Rock Mechanics and Geotechnical Engineering, Open Geomechanics, Chemical Engineering Journal, The Journal of Supercritical Fluids.

PROFESSIONAL MEMBERSHIP/ AFFILIATIONS

- American Society of Civil Engineers (ASCE) Geo-Institute (GI), ASCE Engineering Mechanics Institute (EMI), American Rock Mechanics Association (ARMA)