

Yida Zhang

Department of Civil, Environmental and Architectural Engineering
University of Colorado at Boulder
UCB 428, Boulder, CO 80309-0428
Tel: 303-492-0962; Email: yida.zhang@colorado.edu

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.

FELLOWSHIPS

- 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]. Zheng, H.[‡], Yang, Z.X.^{*}, **Zhang, Y.** (2020) CFD-DEM modeling of suffusion effect on undrained behavior of internally unstable soils. *Computers and Geotechnics*, Accepted, DOI: 10.1016/j.compgeo.2020.103692.
- [J2]. Zheng, H.[‡], **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.
- [J3]. **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.
- [J4]. 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.
- [J5]. Zheng, H.[‡], **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.
- [J6]. **Zhang, Y.**^{*} (2018). Mechanics of adsorption-deformation coupling in porous media. *Journal of the Mechanics and Physics of Solids* **114**, 31-54.

* Corresponding author

† Primary graduate student advisee

‡ China Scholarship Council PhD scholar advisee

§ China Scholarship Council research scholar

** Secondary graduate student advisee

- [J7]. Zhou, X.[†], Ma, G.[§], **Zhang, Y.**^{*} (2018). Grain size and time effect on the deformation of rockfill dams: a case study on the Shuibuya CFRD. *Géotechnique* **69**(7), 606-619
- [J8]. 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.
- [J9]. 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.
- [J10]. **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.
- [J11]. 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.
- [J12]. **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.
- [J13]. 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.
- [J14]. **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.
- [J15]. **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.
- [J16]. **Zhang, Y.D.**, Buscarnera, G.^{*} (2015). Prediction of breakage-induced couplings in unsaturated granular soils. *Géotechnique* **65**(2), 135-140.
- [J17]. **Zhang, Y.D.**, Buscarnera, G.^{*} (2014). Grainsize dependence of elastic yielding in unsaturated granular soils. *Granular Matter* **16**(4), 469-483.
- [J18]. 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.

Refereed journal articles under review

- [J19]. Zhou, X.[†], Liu, S., **Zhang, Y.**^{*} (2020) Permeability evolution of fractured sorptive geomaterials: Implications for coalbed methane production. *Rock Mechanics and Rock Engineering*, under review.
- [J20]. Sisodiya, M.[†], Singh, S.[†], Thomas, D., **Zhang, Y.**^{*} (2020) Effect of water-rock interaction on the axial capacity of drilled caissons socketed in claystone bedrock. *Journal of Geotechnical and Geoenvironmental Engineering*, under review.
- [J21]. Singh, S.[†], Zurakowski, Z., Dai, S., **Zhang, Y.**^{*} (2020) Effect of grain crushing on hydraulic conductivity of tailings sand. *Journal of Geotechnical and Geoenvironmental Engineering*, under review.
- [J22]. Sisodiya, M.[†], **Zhang, Y.**^{*} (2020) A directional microcrack damage theory based on continuous hyperplasticity. *Proceedings of the Royal Society A*, under review.
- [J23]. Eskandari-Ghadi, M.[†], **Zhang, Y.**^{*} (2020) Adsorption-deformation coupling in microporous solids: the role of surface forces. *International Journal of Solids and Structures*, under review.
- [J24]. Wen, Y.[†], **Zhang, Y.**^{*} (2020) Evidence of a Unique Critical Fabric Surface for Granular Soils. *Géotechnique*, under review.

Refereed journal articles in preparation

- [J25]. Wen, Y.[†], **Zhang, Y.*** (2020) Fabric-void ratio relation for granular materials. In preparation for *Granular Matter*.
- [J26]. Eskandari-Ghadi, M.[†], **Zhang, Y.*** (2020) Sorption-induced deformation: effect of pore size under a unified poromechanical framework. In preparation for *International Journal of Solid and Structures*.
- [J27]. Sisodiya, M.[†], **Zhang, Y.*** (2021) A rate-dependent directional damage theory for brittle rocks considering the kinetics of microcrack growth. In preparation for *Rock Mechanics and Rock Engineering*.

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]. 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.
- [C2]. Sisodiya, M.[†], **Zhang, Y.*** (2020) A thermodynamic-consistent micro-crack damage model for brittle rocks. In *54th US Rock Mechanics/Geomechanics Symposium*, Golden, CO.
- [C3]. **Zhang, Y.*** (2019). Thermodynamic-consistent adsorption-swelling models for coal. In *53rd US Rock Mechanics/Geomechanics Symposium*, New York City, NY.
- [C4]. 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.
- [C5]. 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.
- [C6]. 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.
- [C7]. **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.
- [C8]. **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
- [C9]. 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
- [C10]. **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.
- [C11]. **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

- [1]. 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*.
- [2]. **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.

- [3]. **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 2019, The hidden role of surface forces on the mechanics of geomaterials, *Lawrence Berkeley National Laboratory*, Berkeley, CA.
- [2]. March 2019, Mechanics of adsorption-deformation coupling in porous media, *University of Wyoming*, Laramie, WY.
- [3]. October 2018, Energetics of crushable granular materials – from particle fracture to breakage mechanics, *ALERT Doctoral School 2018*, Aussois, France.
- [4]. July 2018, Application of thermodynamic principles in modeling crushable granular materials under multiphysical loadings, *China University of Petroleum*, Beijing, China.
- [5]. July 2018, Application of thermodynamic principles in modeling crushable granular materials under multiphysical loadings, *Cold & Arid Regions Environmental and Engineering Research Institute*, Lanzhou, China.
- [6]. May 2018, Time and scaling effect on rockfill dams, *IULEE workshop*, Boulder, CO.
- [7]. May 2018, Hydromechanical aspect of grain breakage: testing, modeling, and application, *Stantec*, Denver, CO.
- [8]. April 2018, Effect of evolving grain size on the hydromechanical properties of granular soils, *Knight Piésold*, Denver, CO.
- [9]. March 2018, Time and scaling effect on rockfill dams: a case study on the Shuibuya CFRD, *U.S. Bureau of Reclamation*, Lakewood, CO.
- [10]. 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.
- [11]. March 2017, Water-particle interaction and rate effect in crushing of granular materials, *Colorado School of Mine*, Golden, CO.
- [12]. March 2016, Effect of water-particle interactions on the crushing of granular materials, *University of Colorado Boulder*, Boulder, CO.
- [13]. January 2016, Effect of water-particle interactions on the crushing of granular materials, *Pennsylvania State University*, State College, PA.

Conference podium

- [1]. June 2019, Critical fabric-based constitutive modeling of granular soils, *EMI 2019*, Pasadena, CA.
- [2]. June 2019, Mechanistic adsorption-swelling models for coal subjected to CO₂ injection, *ARMA 2019*, New York, NY.
- [3]. March 2019, Deformation analysis of the 233 m Shuibuya rockfill dam using breakage mechanics, *Geo-Congress 2019*, Philadelphia, PA.
- [4]. June 2018, Settlement analysis of the Shuibuya Rockfill dam using breakage mechanics, *ARMA 2018*, Seattle, WA.
- [5]. May 2018, Thermodynamics of adsorption-deformation coupling in porous media, *EMI 2018*, Boston, MA.
- [6]. June 2017, Creep of unconsolidated sand due to delayed grain breakage, *ARMA 2017*, San Francisco, CA.
- [7]. June 2017, Enhanced grain breakage in surface-reactive environments, *EMI 2017*, San Diego, CA.

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

Conference posters

- [1]. 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.
- [2]. April 2018, Effect of placement condition on the hydromechanical behavior of overexcavation fills. Sisodiya, M. (presenter), Zhang, Y. *CAGE University Gala*, Golden, CO.
- [3]. November 2016, The application of breakage mechanics model on Shuibuya Concrete-Face Rockfill Dam, Zhou X., Ma, G., Zhang, Y. (presenter), *Rocky Mountain GeoConference 2016*, Golden, CO.

FUNDED RESEARCH PROJECTS

Received as PI

- DE-AC02-05CH11231 *Surface Forces in Subcritical Crack Growth and Healing*, Sponsor: Lawrence Berkeley National Laboratory. Sole PI: Y. Zhang. 10/1/2020-9/30/2021. Award amount: \$90,000.
- 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 - 9/30/2021. Award amount: \$789,178. My approx. share: \$294,573; CUBoulder \$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 sponsored research by Stantec Inc. on *Grain crushing, creep, and permeability evolution of tailings sand from the Cerro Verde mine*. 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: \$17,587.
- 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.
- Engineering Excellence Fund *A novel teaching device for mass transport through porous media*. Sponsor: CUBoulder. PI: Y. Zhang. 3/1/2017 to 7/1/2017. Award amount: \$2,500.
- Engineering Excellence Fund *A quicksand tank for the physical modeling of soil liquefaction*. Sponsor: CUBoulder. PI: Y. Zhang. 12/12/2018 to 5/1/2019. Award amount: \$2,000.

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.

COURSE INSTRUCTION

- Fall 2020, *CVEN 5708 Soil Mechanics*, Graduate Elective, 4 on-campus students. Course Evaluations (out of 5.0): Average = 4.28; Reflect on learning = 4.25; Connect to real world issues = 3.75; be critical thinker = 4.25; respect to diversity = 5; provide feedback = 4.75.
- Spring 2020, *CVEN 5628 Seepage and Slopes*, Graduate Elective, 7 on-campus students. Course Evaluations (out of 5.0 due to COVID-19): Average = 4.60; Reflect on learning = 4.75; Connect to real world issues = 5; be critical thinker = 4.75; respect to diversity = 5; provide feedback = 4.75.
- Fall 2019, *CVEN 5708 Soil Mechanics*, Graduate Elective, 8 on-campus students. Course Evaluations (out of 6.0): course overall = 4; instructor overall = 4; instructor respect/professional treatment = 5.67; intellectual challenge = 5; how much learned = 4.
- Fall 2019, *CVEN 3708 Geotechnical Engineering I*, Undergraduate Proficiency, 59 students. Course Evaluations (out of 6.0): course overall = 3.38; instructor overall = 3.75; instructor respect/professional treatment = 5.78; intellectual challenge = 5.28; how much learned = 3.76.
- Spring 2019, *CVEN 7718 Engineering Properties of Soils*, Graduate Elective, 5 on-campus students. Course Evaluations (out of 6.0): course overall = 4.33; instructor overall = 5.33; instructor respect/professional treatment = 6; intellectual challenge = 4.67; how much learned = 5.33.
- Fall 2018, *CVEN 5708 Soil Mechanics*, Graduate Elective, 5 on-campus students. Course Evaluations (out of 6.0): course overall = 4.8; instructor overall = 4.8; instructor respect/professional treatment = 6; intellectual challenge = 4.94; how much learned = 5.4.
- Fall 2018, *CVEN 3708 Geotechnical Engineering I*, Undergraduate Proficiency, 46 students. Course Evaluations (out of 6.0): course overall = 2.5; instructor overall = 2.91; instructor respect/professional treatment = 5.58; intellectual challenge = 4.94; how much learned = 2.88.
- Spring 2018, *CVEN 7718 Engineering Properties of Soils*, Graduate Elective, 5 on-campus students. Course Evaluations (out of 6.0): course overall = 5.4; instructor overall = 5.8; instructor respect/professional treatment = 6; intellectual challenge = 5.4; how much learned = 5.14.
- Fall 2017, *CVEN 5708 Soil Mechanics*, Graduate Elective, 7 on-campus students. Course Evaluations (out of 6.0): course overall = 5; instructor overall = 5.43; instructor respect/professional treatment = 6; intellectual challenge = 5.86; how much learned = 5.4.
- Fall 2016, *CVEN 5708 Soil Mechanics*, Graduate Elective, 10 on-campus students. Course Evaluations (out of 6.0): course overall = 5; instructor overall = 5.1; instructor respect/professional treatment = 5.9; intellectual challenge = 5.8; how much learned = 5.0.

COURSE DEVELOPMENT

New courses

- Spring 2022 (planned), *Mechanics and Physics of Porous Geomaterials*, Graduate Elective, 3 credit hours. New course on the physics and mechanics of porous materials, targeting at students with civil engineering, mechanical engineering, and geological science background, will be developed. Topics will include the basic balance laws and thermodynamics of deformable saturated porous solid, thermoporoelasticity, classical poroelastic problems and solutions, unsaturated porous media, transport processes in porous solid, poroplasticity, interfacial effects, phase transition in porous

solids. Uses FEA and material-point driver for implementation and analysis. The course will provide a foundation on poromechanics and its interplay with the other multiphysical and physiochemical processes.

Major revision of existing courses

- Spring 2020, *CVEN 5628 Seepage and Slopes*, Graduate Elective, 3 credit hours. Developed new sets of lecture notes and problem sets related to seepage, unsaturated soil mechanics and slope stability analysis. General topic areas covered include governing equations for fluid transport in soils, seepage, flow net, basic concepts for unsaturated soils, Richard's equation and unsaturated flow, strength of unsaturated soils, slope stability for saturated and unsaturated slopes. Finite element packages including GeoStudio and PLAXIS are used for analysis. The course emphasizes the fundamentals of hydromechanical coupling and trains the students to use a wide variety of tools in solving related geotechnical problems.
- Fall 2019, *CVEN 5708 Soil Mechanics*, Graduate Elective, 3 credit hours. Developed new sets of lecture notes and problem sets related to introductory mechanics of soils. General topic areas covered include stress path method, elemental soil testing techniques, shear strength properties of sand, cyclic behaviors, soil fabric, clay mineral, shear strength properties of clay, pore pressure parameters, soil compressibility, time rate of consolidation, and geotechnical field tests. Three laboratory sessions for direct shear, triaxial compression, and consolidation tests are included in the course to provide students with hands-on experience with soils.
- Spring 2019, *CVEN 7718 Engineering properties of soils*, Graduate Elective, 3 credit hours. Developed new sets of lecture notes and problem sets related to theoretical soil mechanics. General topic areas covered include introduction to indicial notations, small deformation continuum mechanics, elasticity, failure criterion, elastoplasticity, critical state soil mechanics and Cam-Clay models, and advanced topics. A MATLAB constitutive driver is provided to teach students numerical integration of stress-strain curves.

STUDENT/RESEARCH ADVISING (primary advisor)

Current PhD students

- Xiang Zhou, *Continuum modeling of granular materials and multiphysical processes in porous media*. Sept. 2016 – present.
- Mitul Sisodiya, *Damage mechanics based on crack distribution density*. Sept. 2017 – present.
- Mehdi Eskandari-Ghadi, *Mechanics of adsorption-deformation coupling in microporous materials*. June 2019 – present.
- Yuxuan Wen, *A unique critical fabric surface in quasi-static and dynamic flow of granular media*. Sept. 2018 – present.
- Andrea Tyrrell, *The thermomechanics of bonded granular materials*. Jan. 2021 – present.

Post-Doctoral Scholars

- Yao Wang, Jan. 2020 – present
- Mohamed Ab Abdelrahman, July. 2019 – Jan. 2020

Past MS students

¹ MS thesis option ² MS report option

- Shubjot Singh¹, Thesis: *Grain crushing and permeability reduction for tailing underflow materials*. Sept. 2018 – Aug. 2020.
- Haonan Xu², report: *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 Teaching Device for Mass Transport in Porous Media*. 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 – present.

THESIS DEFENSE & EXAM COMMITTEES (not primary advisor)

PhD students

- Thesis defense: (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: (2020) Erin Nebel, (2019) Nishanthi Perera, Sobhan Bhattacharya, (2017) Peirce Jarrel

INSTITUTIONAL AND SCHOLARLY SERVICE

CUBoulder Department of Civil, Environmental, and Architectural Engineering

- Geotechnical Engineering Search Committee Member (8/18 – 4/19)
- Graduate Committee Member (09/17 – present)
- Member of the Geotechnical Engineering Joint Evaluation Committee (JEC) (09/16 – 06/17)
- Fundamentals in Engineering (FE) Exam review (10/16, 10/17, 10/18, 10/19, 10/20)
- Director of the undergraduate and graduate Geotechnical laboratories (12/18 – present)
- Lead of the Triaxial MTS device upgrading project (10/18 – present)
- Lead of the geotechnical engineering seminar series (1/19 – present)
- Geotechnical engineering preliminary exam (5/17, 12/17, 5/18, 5/19, 5/20)
- Organization of the Jack Hilf Lecture (Lead 10/17, co-organize 10/18)
- Organization of the Geotechnical Engineering and Geomechanics seminar series (1/2019 – present)
- Search committee member for the structural and geotechnical lab manager (4/17)

Scholarly organizations

- *Unsaturated Soils* committee of the Geo-Institute of the American Society of Civil Engineers (ASCE): Member (9/16 – 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)
- *Underground Storage and Utilization* committee of the ARMA: Member (7/20 – Present)
- Editorial Board Member of *Géotechnique Letters* (9/18 – present)
- Conference Session Chair
 - *Numerical Modeling of Civil Rock Engineering Projects*, with Seunghee Kim, ARMA 2018, Seattle, June 2018.
 - *Multiscale geomechanics*, with Jesse Hampton, ARMA 2019, New York, June 2019.
 - *Numerical Modeling in Rock Mechanics focused on Civil Engineering Projects*, with Xiaoyu Song, ARMA 2020, Golden, June 2020.
- Conference Track lead
 - *Special topics*, with Michelle Lee Barry and Marco Salviato, EMI 2019, Caltech, June 2019.
 - *Interdisciplinary track*, with Shugang Wang, ARMA 2021, Houston, June 2021
- Proposal review
 - National Science Foundation (NSF)-Geotechnical Engineering and Materials, NSF- Fluid Dynamics, U.S. Department of Energy (DOE)- Basic Energy Sciences - Geosciences Program, 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, Geophysical Research Letters, 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.*

PROFESSIONAL MEMBERSHIP/ AFFILIATIONS

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