Chloé Arson

Professor, Cornell University

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Damage and healing mechanics • Fracture and breakage mechanics
Poromechanics • Homogenization and multi-scale modeling
Computational geomechanics • Machine Learning • Bio-inspiration

Education

2006–2009 **Ph.D. Geomechanics**, *Ecole Nationale des Ponts et Chaussées*, France, *Theoretical and numerical study of Thermo-Hydro-Mechanical Damage in Unsaturated Porous Media*, Advisor: Professor B. Gatmiri. €4M EURATOM project involving 8 countries.

2005–2006 **M.Sc. Soil and Rock Mechanics**, *Ecole Nationale des Ponts et Chaussées*, France, *Numerical Study of Seismic Site Effects*, Advisor: Professor B. Gatmiri.

2002–2006 **M.Eng. Civil Engineering**, *Ecole Nationale des Ponts et Chaussées*, France.

2002–2003 **Bachelor Philosophy**, *University Paris I Panthéon-Sorbonne*, France, (two years).

Appointments

2023– **Professor**, Cornell University, Ithaca, NY.
School of Civil and Environmental Engineering

2023– **Adjunct Professor**, Georgia Institute of Technology, Atlanta, GA.
School of Civil and Environmental Engineering

2014– **Adjunct Faculty**, Georgia Institute of Technology, Atlanta, GA.
School of Earth and Atmospheric Sciences, *Courtesy appointment*

2022–2023 **Professor**, Georgia Institute of Technology, Atlanta, GA.
School of Civil and Environmental Engineering, *Tenured position*.
Susan G. and Christopher D. Pappas Professor (01-06/2023).

2016–2022 **Associate Professor**, Georgia Institute of Technology, Atlanta, GA.
School of Civil and Environmental Engineering, *Tenured position*

2012–2016 **Assistant Professor**, Georgia Institute of Technology, Atlanta, GA.
School of Civil and Environmental Engineering, *Tenure-track position*

2009–2012 **Assistant Professor**, Texas A& M University, College Station, TX.
Department of Civil Engineering, *Tenure-track position*

2006–2009 **Graduate Research Assistant**, Ecole Nationale des Ponts et Chaussées, France.

2004–2005 **Engineer Assistant**, Vinci Construction consortium, Dumez Monaco.
Worked one year on a foundation construction site.

04–07/2003 **Undergraduate Research Assistant**, Rheinisch-Westfälische Technische Hochschule (RWTH), Aachen, Germany.

Awards

Research Awards

2021 **BRITE Award**, National Science Foundation.

The NSF BRITE (Boosting Research Ideas for Transformative and Equitable Advances in Engineering) initiative aims to enable and create opportunities to advance scientific discoveries and new research using a variety of approaches that harness the national talent ecosystem of experienced faculty. Recognizing that a successful faculty research career is neither linear nor continuous, this BRITE solicitation seeks proposals that enable experienced researchers and scholars (tenured or equivalent) to forge new directions or to enter new fields by capitalizing or branching out of their established knowledge domains. Award: $525,070.

2017 **Inter-disciplinary Research Award**, Georgia Tech School of Civil and Environmental Engineering.

This prize, attributed every year, recognizes contributions through interdisciplinary research activities. The awards committee examines a nomination package that includes a description of achievements, grants and publications.

2016 **Early CAREER Award**, National Science Foundation.

The CAREER is the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Award: $500,000.

2010 **Ph.D. Prize**, ALERT Geomaterials, (Alliance of Laboratories in Europe for Research and Technology), *ex aequo*.

The ALERT is a European school of thinking in the field of the Mechanics of Geomaterials, gathering 25 European laboratories, and organizing workshops and doctoral schools. The ALERT Prize is recognized in all European institutes that have a division in geomaterials, as well as collaborating research units, even out of Europe. Award: €1,000.

2010 **Ph.D. Special Prize**, Ecole Nationale des Ponts et Chaussées, France.

Every year, six freshly graduated doctors of ENPC are selected to compete for a Ph.D. Prize and a Special Prize. The jury is composed of five faculty members from all disciplines. The prizes are awarded based on an application package (CV, publications, thesis summary) and an oral presentation. ENPC Prizes are recognized in all European institutes of Civil Engineering.

Teaching Recognitions

2015 – 2022 **Thank a Teacher Certificate**, Georgia Institute of Technology, Mechanics of Deformable Bodies (2015, 2016, 2017, 2018, 2019, 2020), Tunneling and Mining: Engineering and Mechanics (2017), Theoretical Geomechanics (2020), Computational Methods in Mechanics (2020) Diversity, Equity and Inclusion in Civil and Environmental Engineering (2022).

Thank a Teacher is a program sponsored by the Center for the Enhancement of Teaching and Learning (CETL), allowing students to give feedback to outstanding teachers, advisers and mentors.

2013 – 2014 **"Class of 1969" Teaching Fellowship**, Georgia Institute of Technology.

The fellowship is earned upon competitive and peer-reviewed evaluation. Georgia Tech "Class of 1969 Teaching Fellowship" program is designed for untenured assistant professors "who want to develop their full teaching potential". Teaching fellows meet weekly during one academic year, and develop innovative in-class activities aimed to improve students' learning. Award: $1,000.

2012 **ExCEEd Teaching Fellowship**, American Society of Civil Engineering.

The "Excellence in Civil Engineering Education" fellowship was earned after completing the ExCEEd Teaching Workshop at the United States Military Academy at West Point, NY. This one-week practicum provides engineering educators with an opportunity to improve their teaching abilities. Candidates are selected based on their motivations and commitment. Teaching fellows become part of an education network across the US and often serve as mentors. Award: $2,075.

Other Honors

2023 **Appreciation Award**, American Society of Civil Engineering (ASCE), Engineering Mechanics Institute (EMI).

Received with Dr. Yang Wang for "outstanding service and dedication as co-chairs of the EMI Conference 2023 at Georgia Tech, Atlanta, GA, June 6-9, 2023".

2023–2027 **Susan G. and Christopher D. Pappas Professorship**, Georgia Tech School of Civil and Environmental Engineering.

This termed Professorship was made possible by the School of Civil and Environmental Engineering alumni Susan and Christopher Pappas, who made a donation to support rigorous mechanics-centered research. Amount: $25k/year. Relinquished this termed Professorship in 2023 when moving to Cornell University.

2021–2022 **Office of the Provost's Emerging Leaders Program**, Georgia Institute of Technology.

The Emerging Leaders Program is designed for associate and full professors who have attained tenure, and aims to strengthen a culture of community, estabblish or enhance relationships among people across campus, and enable the collective creation of a leadership climate among all stakeholders. Candidates are selected based on an application packet upon nomination of their School Chair. Over the course of nine months, participants take part in several activities including a fall weekend workshop, monthly workshops, small-group work, and a 360-degree assessment. The program is a collaboration between the Office of the Provost, the Office of the Executive Vice President for Research, the Institute for Leadership and Social Impact, and the Office of Graduate Education and Faculty Development.

2013–2016 **"Future Leader"**, American Rock Mechanics Association.

The aim of the Future Leaders Program is to recognize a group of motivated younger ARMA members of outstanding promise to discuss issues and ideas for the development of ARMA and to become engaged in ARMA leadership. Future leaders serve on ARMA Symposium and other committees including organizing and chairing sessions at the symposium.

2012 **ENHANCE Fellowship**, National Science Foundation.
The "Enhance the Career of Female Faculty in Earthquake Engineering Research" fellowship was granted after competitive and peer-reviewed examination of an application package comprising CV, research interests, teaching experience, essays and letters of recommendation. NSF ENHANCE is an international community of female faculty in earthquake engineering, communicating through a private website, organizing mentoring via workshops, writing activities and personal advising. Award: $1,000.

Grants and Contracts

Summary **Total research funding: $8.3M**
Grants with Arson as lead-PI: $5.7M
Arson's share from all grants: $4.2M

Federal Agencies

2023–2025 **Impacts of mineralogy on aggregate crushing**, National Science Foundation (NSF), Grant 2134311, Lead-PI: C. Arson, Co-PI: S. Dai, Total budget: $528,157. Arson's share: $261,820.

2022–2024 **BRITE Pivot Track: Micro-macro modeling of reactive flow and rock weathering enhanced by Artificial Intelligence**, National Science Foundation (NSF), CMMI#2135584, Single-PI: C. Arson, Total budget: $525,070.

2021–2024 **Effect of Hydrological Forcing on the Biogeochemical Transformation of Carbon and Greenhouse Gas Emissions in Riparian and Streambed Sediments**, Department Of Energy, Environmental System Science (ESS), Grant DE-SC0022200, Lead-PI: M. Taillefert. Co-PIs: C. Arson, T. DiChristina, D. Kaplan, K. Kemner, Total budget: $999,991. Arson's share: $274,151.

2020–2023 **Mole rat - inspired bidirectional propeller for self-excavating probes**, Center for Bio-inspired and Bio-mediated Geotechnics, National Science Foundation, Single Investigator: C. Arson, Total budget: $242,675..

2019–2022 **SitS NSF UKRI: Rapid deployment of multi-functional modular sensing systems in the soil**, National Science Foundation and United Kingdom Research and Innovation, Grant 1935548, PI: C. Arson, co-PIs: P. Chau, D. Frost, D. Goldman, F. Hammond; UK Collaborators: D. Dini, A. Holmes, C. O'Sullivan, T. Reddyhoff. Total budget: $ 1,765,477. Total U.S. budget: $799,995. Total U.K. budget: £798,712 ($965,482). Arson's share: $275,000.

2019–2022 **IRES Track I: Mechanics of Porous Media across Scales - Research Experience in Paris (MPMS)**, National Science Foundation, Grant 1854030, Single-PI: C. Arson, collaborators: Drs. A. Antoniou, S. Burns, S. Dai, J.D. Frost, K. Kurtis, L. Stewart, Total budget: $300,000. Arson's share: $295,000.

2018–2021 **Collaborative research: Microscopic fracturing and macroscopic weakening: A novel model for bedrock fracturing by biotite weathering**, National Science Foundation, Geomorphology and Land Use Dynamics, Grant 1755321, Lead-PI: K. Ferrier, co-PIs: C. Arson, N. West, Total budget: $444,000. Arson's share: $100,000.

2017–2018 **LGBTQ Inclusion in Engineering - Workshop**, National Science Foundation, Science, Technology and Society Program, SES#1656085, Lead-PI: A. Pollock, co-PIs: C. Arson, M. Platt, J. Hasler, Total budget: $49,858. Arson's share: $5,500.

2016–2020 **CAREER: Multiphysics Damage and Healing of Rocks for Performance Enhancement of Geo-Storage Systems - A Bottom-Up Research and Education Approach**, National Science Foundation, Geomechanics & Geomaterials Program, CMMI#1552368, Single-PI: C. Arson, Total budget: $500,000.

2015–2017 **Bio-inspired design of deployment and adaptation of utilities networks**, National Science Foundation, Engineering Research Center for Bio-inspired and Bio-mediated Geotechnics, EEC#1449501, Single Senior Investigator: C. Arson, Total budget: $230,000.

2014–2017 **Collaborative research: Linking Salt Rock Deformation Regimes to Microstructure Organization**, National Science Foundation, Geomechanics & Geomaterials Program, CMMI#1362004/1361996, Lead-PI: C. Arson, co-PIs: F. Chester, J. Chester, Total budget: $399,581. Arson's share: $200,000.

2014–2017 **Coupled Geomechanical Processes and Energy Technologies - Research Experience at Ecole des Ponts Paris Tech (ENPC, France)**, National Science Foundation, International Research Experiences for Students, IIA#1357908, Single-PI: C. Arson, Total budget: $200,299.

2014–2016 **International Workshop on Education of Future Geotechnical Engineers in Response to Emerging Multi-scale Soil Environment Problems; Cambridge, UK; September 5-6, 2014**, National Science Foundation, Geomechanics & Geomaterials Program, CMMI#1443990, Lead-PI: C. Arson, co-PI: G. Buscarnera, Total budget: $49,990. Arson's share: $47,000.

State Agencies

2021–2024 **Pragmatic Precast/Prestressed Girder Acceptance Criteria**, Georgia Department of Transportation, Office of Research, Lead-PI: L. Stewart, co-PIs: C. Arson, L. Kahn, G. Loreto, Total budget: $465,000. Arson's share: $138,500.

2017–2019 **Mechanical integrity and sustainability of pre-stressed concrete bridge girders repaired by epoxy injection - Phase III**, Georgia Department of Transportation, Office of Research, Lead-PI: C. Arson, co-PI: L. Stewart, Total budget: $100,000. Arson's share: $20,000.

2017–2020 **Mechanical integrity and sustainability of pre-stressed concrete bridge girders repaired by epoxy injection - Phase II**, Georgia Department of Transportation, Office of Research, Single-PI: C. Arson, Total budget: $300,000.

2016–2017 **Mechanical integrity and sustainability of pre-stressed concrete bridge girders repaired by epoxy injection - Phase I**, Georgia Department of Transportation, Office of Research, Single-PI: C. Arson, Total budget: $75,000.

2013–2015 **Evaluating the Performance of Guardrail Systems For Installation in Georgia by Driving Through Asphalt Layers - Phase I**, Georgia Department of Transportation, Office of Research, Lead-PI: D. Scott, co-PIs: C. Arson, D. White, Total budget: $348,390. Arson's share: $45,000.

Public and Private Research Contracts

2021 **Summer internship: SPH simulation of excavation processes**, Haley & Aldrich, Single-PI: C. Arson, Collaborator at Haley & Aldrich: Vince Dick, Ph.D. student: Haozhou He, Total budget: $15,336. Arson's share: $15,336.

2019 **Fall internship: Deployment of a prototype self-anchored geoprobe**, Haley & Aldrich, Single-PI: C. Arson, Collaborator at Haley & Aldrich: Vince Dick, Ph.D. student: L. Fernando Patino-Ramirez, Total budget: $18,000. Arson's share: $18,000.

2019 **Summer internship: Finite Element modeling of the key anisotropic strain characteristics of reservoir fracture corridors under shear, bending, and extension loads**, ARAMCO Services Company, Single-PI: C. Arson, Collaborator at ARAMCO: Dr. Seth Busetti, Ph.D. student: Haozhou He, Total budget: $20,000. Arson's share: $20,000.

2018 **Develop non-local hypoplasticity model for flow of particulate material in 2D wedge-shaped hopper**, Idaho National Laboratory, PIs: C. Arson (advisor), W. Jin (PhD student), Total budget: $24,000.

2018 **Bio-inspired probe for integrated soil characterization**, Higginbotham Beyond the Classroom Experience Fund, L.F. Patino-Ramirez (PhD student), Advisor: C. Arson, Total budget: $2,400.

2017–2020 **BIOinMECH: The Mechanics of Bio-Inspired Processes: a Multi-scale Study of Multi-Functional Systems**, IDEX Université Grenoble Alpes (France), International Strategic Partnership with Georgia Tech, Lead-PI: L. Sibille, co-PIs: C. Arson, D. Frost, G. Viggiani, E. Ando, R. Peyroux, Total budget: $110,000. Arson's share: $55,000.

2017–2018 **Micro-macro mechanical modeling of teeth with cavities restored by resin-based techniques**, IDEX Université Paris-Saclay (France), Bourse Jean d'Alembert, Single-PI: C. Arson, Total budget: $55,400.

2014–2016 **Modeling Ballast Particle Crushing as a Phase Change**, Association of American Railroads, Affiliated Laboratory for Railway Research, Single-PI: C. Arson, Total budget: $90,738.

2013 **Multi-Scale Fracture Creation and Network Generation During Hydraulic Fracturing**, Lawrence Livermore National Laboratory, Single-PI: C. Arson, Total budget: $27,872.

2012–2014 **Finite Element Modeling of Hydraulic Fracturing**, ConocoPhillips, Single-PI: C. Arson, Total budget: $130,842.

Donations

2015 **Modeling pressure-dependent failure in rock**, ConocoPhillips, Single-PI: C. Arson, Total budget: $30,000.

Institutional Support

2023–2024 **Influence of weathering on the formation of exfoliation joints in granite**, President's Postdoctoral Fellowship Program (PPFP), Georgia Tech, Scholar: Dr. Aislin Reynolds. Advisors: K. Lang and C. Arson. Total budget (PPFP/COS/EAS): ∼$103K (1 year of postdoctoral fellow salary plus travel and material expenses). Arson's share: $50K.

2022 **Principles of swarm assembly of adaptable structures from amorphous soft materials**, Seed Grant Program: Moving Teams Forward - Georgia Tech Institute for People and Technology, PI: D. Goldman, co-PIs: C. Arson, J.D. Frost, M. Goodisman, D. Randall, L. Stewart, Total budget: $100K. Arson's share: $10K.

2015 **Hydraulic Fracturing: A Case Study for Ethical Engineering**, GT-FIRE, Offices of the Executive Vice President for Research and the Provost - Georgia Tech Fund for Innovation in Research and Education, Lead-PI: C. Arson, co-PIs: R. Kirkman, L. Stewart, Total budget: $40,000, Arson's share: $32,000.

2013 **"4G" Workshops - Fostering and Research and Education Partnerships in Geomaterials, Geology, Geophysics and Geosystems**, GT-FIRE, Offices of the Executive Vice President for Research and the Provost - Georgia Tech Fund for Innovation in Research and Education, Lead-PI: C. Arson, co-PI: C. Huber, Total budget: $750, Arson's share: $750.

2012–2013 **Numerical Modeling of Erosion with Particulate Mechanics and Geotechnical Applications for Transportation Infrastructure**, Texas A&M, Department of Civil Engineering and Texas Transportation Institute, Single-PI: C. Arson, Total budget: $12,000.

2010–2011 **Innovative Research Travel Funds**, Texas A&M, Department of Civil Engineering, Single-PI: C. Arson, Total budget: $5,000.

Collaborative Facilities User Projects

2023 **Supercomputing for 2D reactive flow coupled with pore microstructure changes and greenhouse gas emissions**, Pacific Northwest National Laboratory, Compass System (high-performance computing cluster available to select DOE-funded researchers), PI: C. Arson, as part of the DOE grant DE-SC0022200 entitled "Effect of Hydrological Forcing on the Biogeochemical Transformation of Carbon and Greenhouse Gas Emissions in Riparian and Streambed Sediments" with lead-PI Dr. M. Taillefert. Total: 100k core-hours.

2018 **Deployment of root hairs and slime molds around obstacles: a good engineering design?**, Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, Lead-PI: C. Arson, co-PI: S. Retterer, Total: 5 days of work in CNMS cleanroom and multi-modality live-cell imaging facility.

2017 **Bio-inspired deployment, accommodation and adaptation of subsurface flow networks**, Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, Lead-PI: C. Arson, co-PI: S. Retterer, Total: 10 days of work in CNMS multi-modality live-cell imaging facility.

2016 **Bio-inspired optimization of flow network accommodation around obstacles**, Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, Lead-PI: D. Hu, co-PIs: C. Arson, S. Retterer, Total: 5 days of work in CNMS cleanroom and multi-modality live-cell imaging facility.

Publications

Summary

Journal Papers: 77

Conference Papers: 61

Keynote lectures: 3

Invited seminars: 43

ISI Web of Science: H=20

Google Scholar: H=26, I_{10}=48

(*) indicates Dr. Arson's students

Press Coverage

2019 **Research Group Profile: Damage Poro-mechanics group at GeorgiaTech (DeeP MeLT)**, *Micro-macro damage and healing mechanics of crystalline and porous media*, Newsletter of ASCE Engineering Mechanics Institute, January 2019, Highlights on Dr. Arson's research group.

2018 **Portrait d'un acteur-clé: Chloé Arson**, *Atlanta: Coopération Scientifique et Universitaire, in: Mission pour la Science et la Technologie - Rapport d'acivité 2017 (in French)*, Ambassade de France aux Etats-Unis (Embassy of France in the United States).

2017 **A Career in Modelling**, *Watson Forum Interview*, YouTube Channel: https://www.youtube.com/modellingcareers.

2015 **Future Of Fracking In Georgia Dependent On Several Issues**, *A Closer Look, program hosted by R. Scott and D. O'Hayer at the NPR (WABE 90.1 FM) on 09/09/2015*, Guests: K. Erbersback and C. Arson.

2012 **Research Group Profile: Damage Poro-mechanics group at GeorgiaTech (DeeP MeLT)**, *Poromechanics of Damage and Healing: A Philosophy of the Mesoscale*, Newsletter of ASCE Engineering Mechanics Institute, December 2012, Highlights on Dr. Arson's research group.

Editorial

2021

[ED01] **H. Dankowicz, C. Arson, Y. Kulkarni, A. Ardekani, S.H. Daly, D.M. Kochmann, M. Leamy, G. Seidel, T. Siegmund, P. Vlahovska, Y.F. Zhang**, *Journal Commitment to Diversity, Equity and Inclusion*, Applied Mechanics Reviews, DOI: 10.1115/1.4050784.

Book Chapter

2018

[BC01] **A. Bobet, C. Arson, D.Elsworth, Y. Fang, Z. Feng, Q. Gan, Y. Guglielmi, K. Im, T. Ishibashi, G.I Izadi, A. Modiriasari, P. Nelson, J. Pogacnik, J. Taron, I. Tomac, C. Wang**, *Rock Mechanics*, in: Geotechnical Fundamentals for Addressing New World Challenges, P. Culligan, A. Whittle and J. Mitchell eds.

Peer-reviewed Journal Papers

2023

[J77] **T. Xu*, C. Arson**, *Interface homogenization approach for mechanical healing driven by pressure solution*, Journal of Engineering Mechanics, DOI: 10.1061/JENMDT/EMENG-7079.

[J76] **H. He*, A. Karsai, B. Liu, F.L. Hammond III, D.I. Goldman, C. Arson**, *Simulation of compound anchor intrusion in dry sand by a hybrid FEM+SPH method*, Computers and Geotechnics, DOI: 10.1016/j.compgeo.2022.105137.

[J75] **F. Patino-Ramirez*, F. Anselmucci*, E. Andò, G. Viggiani, B. Caicedo, C. Arson**, *Deformation and failure mechanisms of granular soil around pressurised shallow cavities*, Géotechnique, DOI: 10.1680/jgeot.21.00136.

2022

[J74] **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, J.D. Frost, R. Full, M. Ghayoomi, D. Goldman, N. Gravish, I. Guzman, J. Hambleton, E. Hawkes, M. Helms, D. Hu, L. Huang, S. Huang, C. Hunt, D. Irschick, H. 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, H.H. Stutz, A. Summers, J. Tao, M. Tolley, L. Treers, K. Turnbull, R. Valdes, L. van Passen, G. Viggiani, D. Wilson, W. Wu, X. Yu, J. Zheng**, *Bio-inspired Geotechnical Engineering: Principles, Current Work, Opportunities and Challenges*, Géotechnique, DOI: 10.1680/jgeot.20.P.170.

[J73] **L.F. Patino-Ramirez*, Z.J. Wang, D.H. Chau, C. Arson**, *Back-calculation of soil parameters from displacement-controlled cavity expansion under geostatic stress by FEM and machine learning*, Acta Geotechnica, DOI: 10.1007/s11440-022-01698-z.

[J72] **T. Xu*, X. Shen*, M. Reed, N. West, K. Ferrier, C. Arson**, *Anisotropy and micro-crack propagation induced by weathering, regional stresses and topographic stresses*, Journal of Geophysical Research - Solid Earth, DOI:10.1029/2022JB024518.

[J71] **C. O'Sullivan, C. Arson, B. Coasne**, *A perspective on Darcy's law across the scales: from physical foundations to particulate mechanics*, Journal of Engineering Mechanics, DOI: 10.1061/(ASCE)EM.1943-7889.0002153 – **Featured in the Editor's Choice Collection**.

[J70] **Z. Wu*, T. Xu*, C. Arson**, *Effect of the intermediate principal stress on pre-peak damage in hard rock under true triaxial compression*, Rock Mechanics and Rock Engineering, DOI: 10.1007/s00603-022-02981-x.

[J69] **S.V. Bokkisa*, J. Macedo, A. Petalas, C. Arson**, *Assessing flow liquefaction triggering considering fabric anisotropy effects under the ACST framework*, Computers and Geotechnics, DOI: 10.1016/j.compgeo.2022.104796.

[J68] **K. Ji*, L. Stewart, C. Arson**, *Molecular Dynamics analysis of silica/PMMA interface shear behavior*, Polymers, DOI: 10.3390/polym14051039.

[J67] **T. Xu*, C. Arson**, *Self-consistent approach for modeling coupled elastic and visco-plastic processes induced by dislocation and pressure solution*, International Journal of Solids and Structures, DOI: 10.1016/j.ijsolstr.2021.111376.

2021

[J66] **F. Anselmucci*, E. Andò, G. Viggiani, N. Lenoir, C. Arson, L. Sibille**, *Imaging local soil kinematics during the first days of maize root growth in sand*, Scientific Reports, DOI: 10.1038/s41598-021-01056-1.

[J65] **F. Anselmucci*, E. Ando, G. Viggiani, N. Lenoir, R. Peyroux, C. Arson, L. Sibille**, *The use of X-ray tomography to investigate soil deformation around growing roots*, Géotechnique Letters, DOI: 10.1680/jgele.20.00114.

[J64] **J. Ding, F.M. Chester, J.S. Chester, X. Shen*, C. Arson**, *Coupled brittle and viscous micromechanisms produce semibrittle flow, grain-boundary sliding, and anelasticity in salt-rock*, Journal of Geophysical Research: Solid Earth, DOI: 10.1029/2020JB021261.

[J63] **K. Ji*, N. Gao, P. Wang*, L. Stewart, C. Arson**, *Finite Element model of concrete repaired by High Molecular Weight Methacrylate (HMWM)*, Engineering Structures, DOI: 10.1016/j.engstruct.2021.111860.

[J62] **F. Patino-Ramirez*, C. Arson, A. Dussutour**, *Substrate and cell fusion influence on slime mold network dynamics*, Scientific Reports, DOI: 10.1038/s41598-020-80320-2.

[J61] **X. Shen*, J. Ding, I. Lordkipanidze*, C. Arson, J. Chester, F.M. Chester**, *Fabric evolution and crack propagation in salt during consolidation and cyclic compression tests*, Acta Geotechnica, DOI: 10.1007/s11440-020-01117-1.

[J60] **X. Shen*, J. Ding, C. Arson, F. Chester, J. Chester**, *Micro-mechanical Modeling for Rate-Dependent Behavior of Salt Rock under Cyclic Loading*, International Journal for Numerical and Analytical Methods in Geomechanics, DOI: 10.1002/nag.3133.

2020

[J59] **W. Jin*, J. Aufrecht, F. Patino-Ramirez*, H. Cabral*, C. Arson, S. Retterer**, *Modeling root system growth around obstacles*, Scientific Reports, DOI: 10.1038/s41598-020-72557-8.

[J58] **F. Patino-Ramirez*, C. Layhee, C. Arson**, *Horizontal directional drilling (HDD) alignment optimization using ant colony optimization*, Tunnelling and Underground Space Technology, DOI: 10.1016/j.tust.2020.103450.

[J57] **X. Shen*, C. Arson, J. Ding, F. Chester, J. Chester**, *Mechanisms of anisotropy in salt rock upon micro-crack propagation*, Rock Mechanics and Rock Engineering, DOI : 10.1007/s00603-020-02096-1.

[J56] **K. Ji*, C. Arson**, *Tensile strength of calcite/HMWM and silica/HMWM interfaces: A Molecular Dynamics analysis*, Construction and Building Materials, DOI:10.1016/j.conbuildmat.2020.118925.

[J55] **F. Patino-Ramirez*, C. Arson**, *Transportation networks inspired by leaf venation algorithms*, Journal of Bioinspiration and Biomimetics, DOI: 10.1088/1748-3190/ab7571.

[J54] **C. Arson**, *Micro-macro mechanics of damage and healing in rocks*, Open Geomechanics, DOI: 10.5802/ogeo.4.

[J53] **P. Wang*, N. Gao, K. Ji*, L. Stewart, C. Arson**, *DEM analysis on the role of aggregates on concrete strength*, Computers and Geotechnics, DOI: 10.1016/j.compgeo.2019.103290.

[J52] **T. Ibru, S. Violante, E. Vennat, C. Arson, A. Antoniou**, *Structure and mechanical behavior of dentin-inspired nanoporous copper*, Scripta Materialia, DOI: 10.1016/j.scriptamat.2019.09.034.

[J51] **C. Arson, Y. Yasothan*, R. Jeanneret*, N. Roubier, E. Vennat**, *An alternative to periodic homogenization for dentin elastic stiffness*, Journal of Mechanics in Medicine and Biology, DOI: 10.1142/S0219519419500817.

[J50] **W. Jin*, C. Arson**, *Fluid driven transition from damage to fracture in anisotropic porous media - a multiscale XFEM approach*, Acta Geotechnica, DOI: 10.1007/s11440-019-00813-x.

2019

[J49] **F. Patino-Ramirez*, A. Broussard, C. Arson, A. Dussutour**, *Substrate composition directs slime molds behavior*, Scientific Reports, DOI:10.1038/s41598-019-50872-z.

[J48] **X. Shen*, C. Arson, K. Ferrier, N. West, S. Dai**, *Mineral weathering and bedrock weakening: Modeling microscale bedrock damage under biotite weathering*, Journal of Geophysical Research: Earth Surface, DOI:10.1029/2019JF005068.

[J47] **W. Jin*, C. Arson**, *XFEM to couple nonlocal micromechanics damage with discrete mode I cohesive fracture*, Computer Methods in Applied Mechanics and Engineering, DOI: 10.1016/j.cma.2019.112617.

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[V03] **T. Xu*, X. Shen*, M. Reed, N. West, K. Ferrier, C. Arson**, *Competition between biotite weathering and regional stresses: answers from homogenization and Finite Element simulation*, Biot-Bazant conference in Engineering Mechanics and Physics of Porous Materials, June 1-3, 2021, Northwestern University, Evanston, IL (virtual conference).
Video proceedings archived in Figshare. DOI: 10.6084/m9.figshare.14773599.v1

[V02] **F. Anselmucci*, E. Ando, G. Viggiani, N. Lenoir, R. Peyroux, C. Arson, L. Sibille**, *Quantification of root-induced shear on sand*, Biot-Bazant conference in Engineering Mechanics and Physics of Porous Materials, June 1-3, 2021, Northwestern University, Evanston, IL (virtual conference).
Video proceedings archived in Figshare. DOI: 10.6084/m9.figshare.14781468.v2

[V01] **K. Ji*, C. Arson**, *Silica/Epoxy interface shear debonding: interlocking or van der Waals forces? Insights from Molecular Dynamics*, Biot-Bazant conference in Engineering Mechanics and Physics of Porous Materials, June 1-3, 2021, Northwestern University, Evanston, IL (virtual conference).
Video proceedings archived in Figshare. DOI: 10.6084/m9.figshare.14785860.v1

Conference Abstracts

2023

[A38] **T. Xu, C. Arson**, *Homogenization model for layered media: the coupling effect of bedding direction and mineral fabric*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

[A37] **S. Singhai, C. Arson**, *Deep learning models for subterranean navigation and soil characterization*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

[A36] **C. Jiang, M. Taillefert, C. Arson**, *Finite Element analysis for predicting greenhouse gas emissions in riparian and hyporheic zones*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

[A35] **D. Chou, C. Arson**, *Microstructure transitions from stress field latent features extracted by a Variational Auto-Encoder*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

[A34] **M. Belachew, K. Yamamoto, J.D. Frost, C. Arson**, *Numerical analysis of sequential tunnel excavation inspired by ants*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

[A33] **C. Arson**, *Chemo-mechanical homogenization applied to climate and energy geomechanics*, Conference of the Engineering Mechanics Institute 2023, June 6–9, 2023, Georgia Institute of Technology, Atlanta, GA.

2022

[A32] **C. Arson, D.H. Chau, F. Patino-Ramirez*, Z. Wang, S. Singhai*, X. Wang***, *Artificial Intelligence toolbox for subsurface exploration by self-excavating robots*, ALERT Workshop 2012, Session #2: Robot-ground internations, Aussois, France, September 26 - October 1, 2022.

[A31] **T. Xu*, C. Arson**, *A self-consistent approach to interfaces of variable stiffness in polycrystalline materials subject to pressure solution*, Conference of the Engineering Mechanics Institute 2022, May 31- June 3, 2022, The Johns Hopkins University, Baltimore, MD.

[A30] **H. He*, A. Karsai, B. Liu, F. Hammond III, D.I. Goldman, C. Arson**, *SPH+FEM analysis of anchoring capacity in dry silica sand*, Conference of the Engineering Mechanics Institute 2022, May 31- June 3, 2022, The Johns Hopkins University, Baltimore, MD.

[A29] **D. Chou*, C. Arson**, *Optimizing 3D Fabric Tensor Calculation from 2D Images using Artificial Neural Networks*, Conference of the Engineering Mechanics Institute 2022, May 31- June 3, 2022, The Johns Hopkins University, Baltimore, MD.

[A28] **V.S. Bokkisa*, J. Macedo, A.L. Petalas, C. Arson**, *On the effects of fabric on the instability surface of granular materials*, Conference of the Engineering Mechanics Institute 2022, May 31- June 3, 2022, The Johns Hopkins University, Baltimore, MD.

[A27] **M. Belachew*, K. Yamamoto, E. Nichols, D. Zhang, J.D. Frost, C. Arson**, *Ant nest geometry, stability and excavation - Inspiration for tunneling*, Conference of the Engineering Mechanics Institute 2022, May 31- June 3, 2022, The Johns Hopkins University, Baltimore, MD.

2021

[A26] **M. Reed, W. Nachlas, K. Ferrier, N. West, C. Arson, T. Xu*, X. Shen***, *Exploring the role of biotite characteristics on rock damage*, American Geophysical Union Fall Meeting, December 13-17, 2021, New Orleans, LA.

2020

[A25] **T. Xu*, C. Arson**, *A self-consistent approach for the elastic-viscoplastic behavior and damage response of polycrystalline materials*, Conference of the Engineering Mechanics Institute 2020 (postponed; presented at the virtual conference held in 2021).

[A24] **H. He*, C. Arson**, *An 8-node cohesive element coupled with continuum damage mechanics*, Conference of the Engineering Mechanics Institute 2020 (postponed; presented at the virtual conference held in 2021).

2019

[A23] **F. Anselmucci*, E. Ando, L. Sibille, N. Lenoir, R. Peyroux, C. Arson, G. Viggiani**, *3D Observation and kinetic analysis of root growth in sand*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

[A22] **K. Ji*, C. Arson**, *MD-XFEM model of HMWM epoxy-concrete interface*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

[A21] **N. Mahabadi, C. Arson, L. van Passen**, *Leaf inspired drainage networks: a hybrid numerical-experimental study*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

[A20] **L.F. Patino-Ramirez*, C. Arson**, *Mechanics of vessel pressurization in soil under biaxial stress: a 3D analysis using CT scanning*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

[A19] **X. Shen*, C. Arson, S. Brisard**, *Pros and cons of the Mori-Tanaka scheme for modeling damage propagation due to biotite weathering in granite*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

[A18] **T. Xu*, C. Arson**, *Multiscale modeling of the competition between mechanical damage and healing in salt polycrystals*, Conference of the Engineering Mechanics Institute and of the Geo-Institute 2019, CalTech, Pasadena, CA, June 18-21.

2018

[A17] **J. Ding, F.M. Chester, J.S. Chester, X. Shen*, C. Arson**, *Elastic Behavior with Grain Boundary Sliding in Semi-brittle Synthetic Salt-rock*, American Geophysical Union Fall Meeting 2018, Washington DC, Dec. 10-14, 2018.

[A16] **K. Ji*, C. Arson**, *An XFEM model of fracture propagation in concrete repaired by epoxy informed by Molecular Dynamics*, Conference of the ASCE Engineering Mechanics Institute, Massachusetts Institute of Technology, Cambridge, MA, May 29-June 1, 2018.

[A15] **W. Jin*, C. Arson**, *From non-local enhanced micro-crack damage to macro cohesive fracture - a coupled computational tool using XFEM*, Conference of the ASCE Engineering Mechanics Institute, Massachusetts Institute of Technology, Cambridge, MA, May 29-June 1, 2018.

[A14] **X. Shen*, C. Arson**, *Anisotropic micro-macro model of mechanical healing in halite*, Conference of the ASCE Engineering Mechanics Institute, Massachusetts Institute of Technology, Cambridge, MA, May 29-June 1, 2018.

[A13] **P. Wang*, C. Arson**, *Discrete Element Modeling of aggregate/cement interactions and fracture propagation in concrete*, Conference of the ASCE Engineering Mechanics Institute, Massachusetts Institute of Technology, Cambridge, MA, May 29-June 1, 2018.

2015

[A12] **C. Arson, L.A.N.R. Douma*, C. Zhu*, C.J. Spiers**, *Role of salt specific surface in healing processes driven by diffusion and pressure solution*, Conference of the ASCE Engineering Mechanics Institute, Stanford University, Palo Alto, CA, June 16-19, 2015.

[A11] **R. Kirkman, R. Harris, A. Francis*, H. Xu*, C. Arson, L. Stewart**, *An Integrative Approach to the Ethics of Hydraulic Fracturing: A Report on Work in Progress*, Annual International Conference of the Association of Practical and Professional Ethics, Costa Mesa, CA, February 19-22, 2015.

2014

[A10] **S. Busetti, H. Xu*, C. Arson**, *Simulation of Anisotropic Rock Damage for Geologic Fracturing*, American Geophysical Union Fall Meeting 2014, San Francisco, California, December 15-19, 2014.

2013

[A09] **J.-M. Pereira, C. Arson**, *Modeling Rock Permeability and Retention Properties During Crack Opening and Closure*, ALERT Workshop 2013, Session #3: Degradation in Geomaterials, Aussois, France, September 30 - October 5, 2013.

[A08] **C. Arson**, *An Observation Scale For Healing: Phenomenological Modeling of Stiffness Recovery in Salt Rock*, Conference of the ASCE Engineering Mechanics Institute, Northwestern University, Evanston, IL, August 4-7, 2013, ID.107.

2012

[A07] **M. Sanchez, C. Arson**, *Analysis of Unsaturated Clayed Materials Hydration Incorporating the Effect of Thermo-Osmotic Flow*, 5th International Meeting on Clays in Natural and Engineering Barriers for Radioactive Waste Confinement, Montpellier, France, October 22-25, 2012.

[A06] **C. Arson**, *Two-Scale Model of Stiffness for 1D Tensile Crack Opening, Closure and Healing*, International US-Poland Workshop on Multiscale Computational Modeling of Cementitious Materials, Krakow, Poland, October 18-19, 2012.

[A05] **C. Arson**, *Discrete versus Continuum Modeling Of Ballast Particle Crushing*, 49th Annual Meeting of the Society of Engineering Science, Symposium VII.1. "Mechanics of Substructure Materials", Georgia Tech, Atlanta, GA, October 10-12, 2012, ID.790.

[A04] **J.-M. Pereira, C. Arson**, *Study of the Influence of Pore and Crack Sizes on Unsaturated Rock Permeability by a Mechanical Damage Model*, 49th Annual Meeting of the Society of Engineering Science, Symposium VII.1. "Mechanics of Substructure Materials", Georgia Tech, Atlanta, GA, Oct. 10-12, 2012, ID.688.

[A03] **E. Vennat, C. Arson**, *Stiffness Homogenization of Damaged Teeth Repaired by Resin Injection*, 49th Annual Meeting of the Society of Engineering Science, Symposium VII.1. "Mechanics of Substructure Materials", Georgia Tech, Atlanta, GA, Oct. 10-12, 2012, ID.662.

2010

[A02] **C. Arson, J.-M. Pereira**, *Permeability in Damaged Porous Rocks*, American Geophysical Union Fall Meeting 2010, San Francisco, California, December 13-17, 2010.

2009

[A01] **C. Arson, B. Gatmiri**, *Mechanical validation of a damage model for non isothermal unsaturated porous geomaterials*, Conference on the Impact of the THMC Processes on the safety of underground repositories, Luxembourg, 29th September 2009.

Keynote Lectures

2022

[K03] **C. Arson**, *Coupling continuum damage mechanics and discrete fracture models: a geomechanics perspective*, 16^{th} International Conference of the International Association for Computer Methods and Advances in Geomechanics, Torino, Italy, August 30 - September 2, 2022.

2019

[K02] **C. Arson**, *Micro-macro damage and healing rock mechanics*, Early Career Address, 53^{rd} U.S. Rock Mechanics / Geomechanics Symposium, June 24, 2019.

2018

[K01] **C. Arson**, *Micro-macro modeling of dentin elastic properties*, IS Atlanta 2018, ISSMGE conference micro-to-macro geomechanics from theory to practice, Sept. 10, 2018.

Invited Seminars

2023

[S43] **C. Arson**, *Multi-scale computational geomechanics for energy and climate*, Worcester Polytechnic Institute, Department of Civil, Environmental and Architectural Engineering, March 15^{th}, 2023 (online).

[S42] **C. Arson**, *Teaching EDI in CEE: An experimental course, and some curricular thoughts*, Canadian Geotechnical Society Alternative Equity, Diversity and Inclusion (EDI) Webinar Series, March6^{th}, 2023 (online).

[S41] **C. Arson**, *Multi-scale computational geomechanics for energy and climate*, Cornell University, School of Civil and Environmental Engineering, February 20^{th}, 2023.

[S40] **C. Arson**, *Multi-scale computational geomechanics for energy and climate*, University of California in San Diego, Structural engineering Seminar Series, January 25^{th}, 2023.

2022

[S39] **C. Arson**, *Chemo-mechanical damage and healing in rock across scales*, Georgia Institute of Technology, School of Earth and Atmospheric Sciences, Geophysics Seminar Series, April 8^{th}, 2022.

2021

[S38] **C. Arson**, *Bio-inspired excavation strategies*, Nanyang Technological University (Singapore), College of Engineering Distinguished Speaker Lecture Series, February 26^{th}, 2021 (virtual).

[S37] **C. Arson**, *Bio-inspired flow network optimization in geotechnics*, University of Colorado Boulder, Geotechnical Engineering and Geomechanics seminar series, February 12^{th}, 2021 (virtual).

[S36] **C. Arson**, *Micro-macro damage and healing rock mechanics*, Lawrence Berkeley National Laboratory, Basic Energy Sciences, seminar of the Geosciences group, January 7^{th}, 2021 (virtual).

2020

[S35] **C. Arson**, *Micro-macro damage and healing rock mechanics*, Pierce Seminar Series, Massachusetts Institute of Technology, September 9^{th}, 2020 (virtual).

2019

[S34] **C. Arson**, *Micro-macro damage and healing rock mechanics*, Seminar at the McCormick School of Engineering, Northwestern University, November 20^{th}, 2019.

[S33] **C. Arson**, *Micro-macro damage and healing rock mechanics*, Seminar at the Pratt School of Engineering, Duke University, October 28^{th}, 2019.

2018

[S32] **C. Arson, X. Shen***, *Micro-macro modeling of chemo-mechanical damage and healing in rocks*, Seminar at Navier Laboratory, Ecole des Ponts Paris Tech, France, June 8^{th}, 2018.

2017

[S31] **C. Arson**, *Micro-macro Damage and Healing Rock Mechanics*, Seminar at the University of Tennessee, Knoxville, TN, November 17th, 2017.

[S30] **C. Arson**, *Bio-inspired Geomechanics*, Seminar at the University of Tennessee, Knoxville, TN, November 16th, 2017.

[S29] **C. Arson**, *Bio-inspired Geomechanics*, Seminar at the Laboratoire de Mécanique des Solides, Ecole Polytechnique (France), June 8th, 2017.

[S28] **C. Arson**, *Bio-inspired Geomechanics*, Seminar at the Laboratoire de Mécanique des Sols, Structures et Matériaux, Ecole Centrale de Paris, (France), May 24th, 2017.

[S27] **C. Arson**, *Micro-Macro Damage and Healing Rock Mechanics*, Seminar at the Laboratoire de Mécanique et Technologie, ENS Cachan (France), May 18th, 2017.

[S26] **C. Arson, L.F. Patino-Ramirez*, W. Jin***, *Bio-inspired design of subsurface flow networks*, Seminar at the CNMS at Oak Ridge National Laboratory, March 9th, 2017.

[S25] **C. Arson**, *Micro-Macro Damage and Healing Rock Mechanics*, Civil and Environmental Engineering Department seminar, Stanford University (Stanford, California), February 28th, 2017.

[S24] **C. Arson, L.F. Patino-Ramirez*, W. Jin***, *Bio-inspired models for infrastructure and flow network optimization, deployment and adaptability*, Seminar of the Engineering Research Center on Bio-inspired and Bio-mediated Geotechnics, January 18th, 2017.

2016

[S23] **R. Kirkman, C. Arson**, *What does environmental justice have to do with me? A students' guide to the responsibilities of engineers*, Serve-Learn-Sustain seminar series, Georgia Tech, Atlanta, GA, November 15th, 2016.

2015

[S22] **C. Arson**, *Damage and Healing Mechanics of Salt Rock*, Seminar at the University of California San Diego (San Diego, California), October 28th, 2015.

[S21] **C. Arson**, *Rock Damage and Healing Mechanics*, Seminar of the Craft & Hawkins Department of Petroleum Engineering, Louisiana State University, (Baton Rouge, Louisiana), May 1st, 2015.

[S20] **C. Arson**, *Damage and Healing Mechanics of Salt*, Seminar of the Department of Geosciences, University of Utrecht, The Netherlands, March 20, 2015.

2014

[S19] **C. Arson**, *Rock Damage and Healing Mechanics*, Seminar of the Bureau of Economic Geology, University of Texas at Austin, (Austin, Texas), October 3rd, 2014.

[S18] **C. Arson**, *Rock Damage and Healing Mechanics*, Seminar of the Department of Civil & Environmental Engineering, Northwestern University (Evanston, Illinois), June 5th, 2014.

[S17] **C. Arson**, *Rock Damage and Healing Mechanics*, Geophysics Department seminar, Stanford University (Stanford, California), May 15th, 2014.

[S16] **C. Arson**, *Rock Fabric Mechanics - Explaining rock damage and healing from microstructure organization*, Seminar of the Georgia Tech School of Earth and Atmospheric Sciences (Atlanta, Georgia), January 9th, 2014.

2013

[S15] **C. Arson**, *Thermodynamics of Rock Damage and Energy Applications*, Seminar hosted by the University of Alaska Fairbanks (Fairbanks, Alaska), May 22nd, 2013.

[S14] **C. Arson**, *Thermodynamic Framework for Damage Poromechanics: Make It or Break It!*, Seminar hosted by the Georgia Tech Department of Nuclear and Radiological Engineering and Medical Physics (Atlanta, Georgia), March 28th, 2013.

[S13] **C. Arson**, *Modeling Damage and Healing in Rock: Open the Observation Window!*, Seminar at Lawrence Livermore National Laboratory (Livermore, California), March 22nd, 2013.

2012

[S12] **C. Arson**, *Poromechanics of Damage and Healing: A Philosophy of the Mesoscale*, Seminar at the Massachussetts Institute of Technology (Cambridge, MA), Dec. 6th, 2012.

[S11] **C. Arson**, *Applications of Damage Poromechanics to Geostorage and Injection Problems*, Seminar at ConocoPhillips Headquarters (Houston, Texas), July 12th, 2012.

[S10] **C. Arson**, *Applications of Damage Poromechanics to Energy Geotechnics*, Seminar of the School of Civil & Environmental Engineering, Georgia Institute of Technology (Atlanta, Georgia), April 4th, 2012.

[S09] **C. Arson**, *Applications of Damage Poromechanics to Energy Geotechnics*, Seminar at Imperial College London (London, U.K.), March 27th, 2012.

[S08] **C. Arson**, *Using Continuum Damage Mechanics to Relate Rock Microstructure Changes to Permeability*, Seminar at Texas A&M Center for Tectonophysics (College Station, Texas), February 1st, 2012.

[S07] **C. Arson**, *Applications of Poromechanics to Energy Engineering*, Seminar at Navier Laboratory (Ecole des Ponts ParisTech, France), January 6th, 2012.

2011

[S06] **C. Arson**, *Applications of Poromechanics to Energy Engineering*, Seminar at the Texas A&M Department of Civil Engineering (College Station, Texas), November 17th, 2011.

[S05] **C. Arson**, *Damage mechanics in rocks and geotechnics*, Seminar at ConocoPhillips Headquarters (Houston, Texas), September 2nd, 2011.

2010

[S04] **C. Arson**, *Modeling Damage in Porous Media*, Seminar at the Virginia Institute of Technology seminar (Blacksburg, Virginia), November 5th, 2010.

[S03] **C. Arson**, *Theoretical and Numerical Study of Thermo-Hydro-Mechanical Damage in Unsaturated Porous Media*, Seminar at the Lawrence Berkeley National Laboratory (Berkeley, California), April 15th, 2010.

[S02] **C. Arson**, *Theoretical and Numerical Study of Thermo-Hydro-Mechanical Damage in Unsaturated Porous Media*, Seminar at the South Western Research Institute (San Antonio, Texas), March 30th, 2010.

2009

[S01] **C. Arson**, *Thermo-Hydro-Mechanical Modeling of Damage in Unsaturated Geomaterials*, Seminar at the Texas A&M Department of Civil Engineering (College Station, TX), Feb. 5th, 2009.

Other Presentations

2022

[P30] **D. Webster, C. Arson, N. Mohammadi**, *Teaching DEI in CEE: an experimental course, and some curricular thoughts*, 2022 National Civil Engineering Department Heads Conference, June 2022.

[P29] **C. Arson**, *Micro-maco modeling of reactive flow and rock weathering enhanced by Artificial Intelligence*, NSF Workshop for "Boosting Research Ideas for Transformative and Equitable Advances in Engineering (BRITE)" awaedees, online, June 6th, 2022.

[P28] **C. Arson**, *A toolbox towards intelligent self-burrowing robots*, NSF-UKRI Workshop for "Signals in the Soil (SiTS)" awardees, online, May 17th, 2022.

[P27] **C. Arson, H. He**, *Burrowing and anchoring inspired by mole rats*, Presentation for the Research Experience for Teachers program of the NSF Engineering Research Center on Bio-inspired and Bio-mediated Geotechnics, recorded, April 2022.

2021

[P26] **C. Arson**, *SitS NSF-UKRI: Rapid Deployment of Multi-Functional Modular Sensing Systems in the Soil*, NSF-UKRI Workshop for "Signals in the Soil (SiTS)" awardees, online, April 2021.

2017

[P25] **C. Arson**, *Damage and Healing Rock Mechanics*, Workshop L3SR-Georgia Tech, Université Grenoble Alpes, L3SR Lab, Grenoble, France, February 10th, 2017.

[P24] **C. Arson, L.F. Patino-Ramirez*, W. Jin***, *Bio-inspired design of subsurface flow networks*, Workshop L3SR-Georgia Tech, Université Grenoble Alpes, L3SR Lab, Grenoble, France, February 9th, 2017.

2016

[P23] **C. Arson**, *Bio-inspired Subsurface Networks*, Army Research Office Workshop on Geo-surface materials dynamics, Chicago, August 17th, 2016.

2015

[P22] **C. Arson, D. Hu, W. Jin*, O. Shishkov***, *Bio-inspired design of interwoven flow networks under topological constraints for optimizing utilities systems*, Presentation of a project of the Center for Bio-Inspired and Bio-mediated Geotechnics to the city of Atlanta, December 8th, 2015.

[P21] **C. Arson, G. Buscarnera**, *Challenges and Future Directions of Geotechnical Engineering Education in Response to Emerging Multi-scale Soil-Environment Problems*, ALERT Workshop 2015, Aussois, France, September 28 – October 3, 2015.

[P20] **P. Wang*, C. Arson**, *Modeling Ballast Particle Crushing as a Phase Change*, American Association of Railroads Affiliated Lab Fall Meeting, College Station, Texas, September 16th, 2015 (in videoconference).

[P19] **W. Jin*, H. Xu*, C. Arson**, *Multi-scale fracture propagation in quasi-brittle rocks*, ConocoPhillips project progress report, Georgia Institute of Technology (Atlanta, Georgia), July 27th, 2015.

[P18] **E. Bakhtiary*, T. Christopher*, R. Yoo*, S. Gong*, C. Arson**, *Modeling Ballast Particle Crushing as a Phase Change*, 20th Annual Research Review of the Association of American Railroads (Colorado Springs, Colorado), March 31st, 2015 (poster).

[P17] **C. Arson**, *Damage Poro-Mechanics Laboratory Team (DeeP MeLT)*, Presentation at the High Pressure and Temperature Laboratory, University of Utrecht, The Netherlands, March 17, 2015.

2014

[P16] **C. Arson**, *Enjeux socio-économiques et défis techniques du stockage souterrain aux Etats-Unis*, Symposium of the Centre Francais de Mécanique des Roches (French Rock Mechanics Association), Stockage Souterrain pour l'Energie et l'Environnement, Ecole des Ponts Paris Tech (Champs-sur-Marne, France), November 25th, 2014.

[P15] **H. Xu*, A. Francis*, C. Arson**, *Hydraulic Fracturing: An Engineering Prospective on Modeling Issues*, Workshop: Risks and policies of Hydraulic Fracturing: Assessment and deliberation, Georgia Tech (Atlanta, Georgia), November 13-14, 2014.

[P14] **H. Xu*, C. Arson**, *Finite Element to Modeling of Hydraulic Fracturing*, ConocoPhillips project progress report, ConocoPhillips Headquarters (Houston, Texas), March 18th, 2014.

2013

[P13] **C. Arson**, *Application of Thermodynamic Principles to the Modeling of Damage and Healing in Rock*, 4G Workshops series (Geomaterials, Geology, Geophysics and Geosystems), co-organized by the School of Civil & Environmental Engineering and the School of Earth & Atmospheric Sciences at the Georgia Institute of Technology, October 17th, 2013.

[P12] **C. Arson, H. Xu*, C. Zhu***, *Phenomenological and Numerical Modeling of the Damaged Zone Processing Around Hydraulic Fractures*, Math, Science and Computation of Hydraulic Fracturing CEES Meeting, Stanford University, March 21st, 2013.

[P11] **H. Xu*, C. Arson**, *Programming a New Damage Model in ABAQUS*, ConocoPhillips project progress report, Georgia Institute of Technology (Atlanta, Georgia), February 4th, 2013.

[P10] **C. Arson**, *Teaching Epistemology to Train Engaged Mechanical Modelers*, 2013 Georgia Tech STEM Education Research Expo, Georgia Tech (Atlanta, Georgia), January 17th, 2013 (poster).

2012

[P09] **H. Xu*, C. Arson**, *Using Continuum Damage Mechanics and the Finite Element to Model Hydraulic Fracturing*, ConocoPhillips project progress report, ConocoPhillips Headquarters (Houston, Texas), July 12th, 2012.

[P08] **H. Xu*, C. Arson**, *Finite Element Modeling of Hydraulic Fracturing*, ConocoPhillips project progress report, Texas A&M University (College Station, Texas), May 16th, 2012.

2011

[P07] **B. Juge*, C. Arson**, *Jet-Grouting: A New Computational Tool to Determine the Grout Injection Distance*, Texas Section ASCE Spring 2011 Meeting, College Station, Texas, April 27-30, 2011.

2010

[P06] **C. Arson**, *A Thermo-Hydro-Mechanical Damage Model for Unsaturated Geomaterials*, Oral Presentation in reception of the PhD Prize of ALERT Geomaterials Society (Alliance of Laboratories in Europe for Research and Technology), Aussois, France, October 5th, 2010.

[P05] **C. Arson**, *Etude théorique et numérique de l'endommagement thermo-hydro-mécanique des milieu poreux non saturés*, (in French), Oral Presentation in reception of the Jury's Special PhD Prize of Ecole des Ponts ParisTech, Champs-sur-Marne, France, June 15th, 2010.

2009

[P04] **C. Arson, B. Gatmiri**, *Theoretical and Numerical Modeling of Damage in Non-Isothermal Unsaturated Clay Rocks*, Colloquium Lagrangianum, Maratea, Italy, February 19-22, 2009.

[P03] **C. Arson, B. Gatmiri**, *THM Damage Modelling in Unsaturated Porous Geomaterials*, TIMODAZ Coordination Meeting, Univ. J. Fourier (Grenoble, France), January 21-23, 2009.

2008

[P02] **C. Arson, B. Gatmiri**, *EDZ in Clay Rocks: A New Damage Model for Unsaturated Porous Media and its Numerical Implementation in Theta-Stock*, TIMODAZ Coordination Meeting, EPFL (Lausanne, Switzerland), July 10-11, 2008.

[P01] **C. Arson, B. Gatmiri**, *A Mixed Damage Model for Unsaturated Porous Media*, Institut Poincaré Winter School: "Fracture and Damage: Formation and Propagation of Singularities in Continuum Mechanics", Ecole Normale Supérieure, Paris, January 30 - February 1st, 2008.

Technical Reports

[T07] **C. Arson, K. Ji**, *Mechanical Integrity and Sustainability of Pre-Stressed Concrete Bridge Girders Repaired by Epoxy Injection - Phase II*, Georgia Departpment of Transportation, Final Report, Research Project RP17-08, 2020.

[T06] **L. Stewart, N. Gao, C. Arson**, *Mechanical Integrity and Sustainability of Pre-Stressed Concrete Bridge Girders Repaired by Epoxy Injection - Phase III*, Georgia Departpment of Transportation, Final Report, Research Project RP17-12, 2019.

[T05] **C. Arson**, *Mechanical Integrity and Sustainability of Pre-Stressed Concrete Bridge Girders Repaired by Epoxy Injection - Phase I*, Georgia Departpment of Transportation, Final Report, Research Project RP16-24, 2017.

[T04] **P. Wang*, C. Arson**, *Numerical Analysis of Micro-Mechanical Crushing Processes in Ballast Particles*, Technology Digest, Transportation Technology Center, Association of American Railroads, 2017.

[T03] **C. Arson, R. Kirkman, L. Stewart**, *Workshop Report: "Risks and Policies of Hydraulic Fracturing: Assessment and Deliberation", Georgia Tech, November 13-14, 2014*, SmarTech Electronic Archive, URL: http://hdl.handle.net/1853/53145, 2015.

[T02] **C. Arson, G. Buscarnera**, *Book of Abstracts Report from: International Workshop on Education of Future Geotechnical Engineers in Response to Emerging Multi-scale Soil-Environment Problems*, SmarTech Electronic Archive, URL: http://hdl.handle.net/1853/52656, 2014.

[T01] **C. Arson, E. Berns*, G. Akrouch, M. Sanchez, J.-L. Briaud**, *Heat Propagation around Geothermal Piles and Implications on Energy Balance*, in: Energy Book Series - Volume # 1: "Materials and processes for energy: communicating current research and technological developments", A. Mendez-Vilas ed., Formatex Research Center, ISBN(13): 978-84-939843-7-3, pp. 628-635, 2013.

Research Supervision

Ph.D. Students (10 graduated, 3 current)

(2026) **Jiang, Chengwu**, *Poromechanical modeling of reaction chains at the origin of greenhouse gas emissions from flood/drought cycles in river beds*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Started at Georgia Tech in Fall 2022. Transferring to Cornell University in Summer 2023.

(2025) **Belachew, Meron**, *Bio-inspired intelligent tunneling*, Ph.D. co-chair, Georgia Tech, Geosystems Engineering. Co-advisor: Dr. J. David Frost (Georgia Tech, Geosystems Engineering).
Ph.D. comprehensive examination passed in Spring 2023.

(2024) **Chou, Daniel**, *Computational methods enhanced by data analysis applied to the mechancial modeling of cemented aggregates*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Ph.D. proposal defense examination passed in Fall 2022.

2023 **He, Haozhou**, *Numerical modeling of discontinuous processes in geomaterials and geosystems*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Numerical modeling research engineer at PPG Industries (starting 07/2023).

2022 **Xu, Tingting**, *Homogenization of coupled deformation, damage and diffusion processes in rocks and finite element applcations in geomechanics and geommorphology*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Post-doctoral researcher at the Johns Hopkins University (since 01/2023).

2020 **Anselmucci, Floriana**, *Root-soil interaction: Effects on soil microstructure*, Ph.D. co-chair, L3SR Grenoble, France. Co-advisor: Dr. Luc Sibille (L3SR Grenoble, France).
Position: Post-doctoral researcher at the University of Twente, The Netherlands (since 06/2021).

2020 **Patino-Ramirez, Luis Fernando**, *Infrastructure network enhancement inspired by nature*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Post-doctoral researcher at Imperial College London, U.K. (since 01/2021).

2020 **Ji, Koochul**, *Numerical modeling of mechanical recovery in damaged concrete repaired by epoxy at molecular and metric scales*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Senior Researcher at the Korea Railroad Research Institute (KRRI), South Korea (since 09/2022). Previously: Senior Professional Researcher, Global Loss Control Center, Samsung Fire & Marine Insurance, South Korea (03/2021-08/2022).

2019 **Shen, Xianda**, *Micro-macro modeling of chemo-mechanical damage and healing in rocks*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Assistant Professor at Clarkson University (since 08/2021). Previously: Post-doctoral researcher at Northwestern University (01/2020-08/2021).

2018 **Wang, Pei**, *Micro-mechanical analysis of quasi-static particulate fragmentation applied to geomaterials*, Ph.D. chair, Georgia Tech, Geosystems Engineering.
Position: Professor at East China Jiaotong University, Nanchang, China (since 06/2023). Previously: Post-doctoral researcher at Hong Kong Polytechnic University (06/2019–06/2023).

2018 **Jin, Wencheng**, *Computational Modeling of the Transition from Damage to Fracture in Intrinsically Anisotropic Porous Media*, Ph.D. chair, Georgia Tech, Geosystems Engineering.

Best CEE Ph.D. Thesis Award, School of Civil and Environmental Engineering, Georgia Tech George F. Sowers Distinguished Graduate Student Award, Geosystems group, School of Civil and Environmental Engineering, Georgia Tech

Position: Research scientist at Idaho National Laboratory (since 03/2021). Previously: Post-doctoral fellow at Idaho National Laboratory (08/2018-02/2021).

2016 **Zhu, Cheng**, *Microstructure-based modeling of damage and healing in salt rock with application to geological storage*, Ph.D. chair, Georgia Tech, Geosystems Engineering.

James S. Lai Distinguished Master's Student Award, Geosystems group, School of Civil and Environmental Engineering, Georgia Tech

Position: Tenured Associate Professor at Rowan University (since 2023). Previously: Tenure-track Assistant Professor at Rowan University (2017-2023). Post-doctoral researcher at the Bureau of Economic Geology at UT Austin (2016-2017).

2014 **Xu, Hao**, *Theoretical and Numerical Modeling of Anisotropic Damage in Rock for Energy Geomechanics*, Ph.D. chair, Georgia Tech, Geosystems Engineering.

Previously: Researcher at Lawrence Berkeley National Laboratory (2015-2021). Post-doctoral researcher at Princeton University (2014-2015).

M.Sc. Students with Thesis (6 graduated)

2018 **Majnooni, Meysam**, *Micro-macro modeling of dentin mechanical behavior: from microscopic uniaxial compression tests to 3D tooth simulation*, M.Sc. co-chair, Ecole Centrale-Supelec (France), Biomechanics.

2018 **Yasothan, Yannick**, *Micro-macro modeling of dentin mechanical behavior: from microscopic three-point bending tests to 3D tooth simulation*, M.Sc. co-chair, Ecole Centrale-Supelec (France), Biomechanics.

2017 **Khalipina, Diana**, *Influence of tubule orientation and peri-tubular density on dentin mechanical stiffness*, M.Sc. co-chair, Ecole Centrale-Supelec (France), Biomechanics.

2012 **Juge, Benjamin**, *Elastic Properties of Jet-Grouted Ground and Applications*, M.Sc. chair, Texas A&M University, Geotechnics.

2009 **Mozayan, Mahsa**, *Thermo-Hydro-Mechanical damage modeling in unsaturated porous media*, M.Sc. co-chair, Ecole Nationale des Ponts et Chaussées (France), Geotechnics.

2007 **Maghoul, Pooneh**, *Study of the combined effects of topography and sediments on the amplification of seismic movements*, M.Sc. co-chair, Ecole Nationale des Ponts et Chaussées (France), Geotechnics.

Supervision of Graduate Students' Research Projects (5 past, 1 current)

current **Srinivas, Vivek**, *Role of fabric in instabilities of granular media subjected to cyclic loading*, Ph.D. research collaborator, since Jan. 2021, Georgia Tech, Geosystems Engineering. Advisor: Dr. Jorge Macedo (Georgia Tech, Geosystems Engineering).

2022–2023 **Singhai, Sanshrit**, *AI prediction of the stress field around a cavity by image reconstruction*, M.Sc. research project advisor, Spring 2022 - Spring 2023, Georgia Tech, Computer Science and Engineering / Geosystems Engineering.

2022–2023 **Wang, Xiangyu**, *Numerical modeling of pre-tension in steel-reinforced concrete*, Graduate research project advisor, Summer 2022 – Spring 2023, Georgia Tech, Civil and Environmental Engineering.

2022 **Wang, Xiangyu**, *AI prediction of the stress field around a cavity by regression analysis*, Graduate research project advisor, Spring 2022, Georgia Tech, Civil and Environmental Engineering.

2018 **He, Haozhou**, *Numerical modeling of fracture propagation in mortar/aggregate mixtures*, M.Sc. advisor, Fall 2018, Georgia Tech, Geosystems Engineering.

2014 **Chen, Yude**, *Numerical modeling approaches to fracture propagation in rock*, M.Sc. advisor, AY 2013-2014, Georgia Tech, Geosystems Engineering.

Supervision of Undergraduate Students' Research Projects (84 advisees)

Spring 2023 **Siffel, Adam**, *Numerical modeling of stochastic elastic properties for intelligent tunneling*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Spring 2023 **Rompos, Garrett**, *Finite Element modeling for intelligent tunneling*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 - Spring 2023 **Ngo, Michelle**, *DEM and AI simulation of the response of granular media to cyclic shear and intelligent tunneling*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 - Spring 2023 **Irani, Flavio**, *Finite Element modeling of geomaterials and intelligent tunneling*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2021 - Spring 2023 **Gupta, Kruti**, *Intelligent tunnelling: use of machine learning to predict cavity expansion*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2021 - Spring 2023 **Hoepfinger, Richard**, *DEM and AI simulation of the response of granular media to cyclic shear, and software development for geomechanics*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Sander, Eric**, *Artificial Intelligence to predict underground stress from discrete knowledge at previous locations*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Natarajan, Aravinth**, *Finite Element modeling of pre-stressed concrete structures*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Maradana, Vishal**, *DEM and AI simulation of the response of granular media to cyclic shear*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Liu, Emily**, *Artificial Intelligence for mineralogy characterization*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Li, Xinjin**, *Artificial Intelligence for mineralogy characterization*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Krishnan, Karthik**, *Artificial Intelligence to predict underground stress from discrete knowledge at previous locations*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2022 **Awadalla, Sajid**, *DEM and AI simulation of the response of granular media to cyclic shear*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Spring 2022 - Fall 2022 **Ganesh, Vasisht**, *Artificial Intelligence for mineralogy characterization*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2021 - Fall 2022 **Kalsi, Kewal**, *Artificial Intelligence for mineralogy characterization*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2021 **Farrior, Jared**, *FEM simulation of intrusion mechanisms*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Fall 2021 **Zhou, Michael**, *Intelligent tunnelling: use of machine learning to predict cavity expansion*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Spring 2021, Fall 2021 **Lehtikoski, Sofie**, *Intelligent tunnelling: use of machine learning to predict cavity expansion*, Georgia Tech VIP Computational modeling and visualization for geomechanics.

Spring 2021 **Begovic, Emina**, *Simulation a mole-rat inspired burrowing robot*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2020 **Ma, Hongyu**, *Design of a mole-rat inspired burrowing robot*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2020 - Spring 2021 **Chittarath, Souliya**, *Reconstruction of bonded aggregate microstructures from X-ray CT scans*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2020 - Spring 2021 **Rotolo, Mark**, *Manufacturing rigid components for propulsion in soil, study of the relationship between soil microstructure and permeability, machine-learnign based mineral charaterization from nano-indetation and microscopy data*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2020, Summer 2020 **Kuperschmid, Ben**, *Design, manufacturing and instrumentation of a displacement-controlled pressure-meter*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2020 **Ali, Kaize**, *Design, manufacturing and instrumentation of a displacement-controlled pressure-meter*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2020 **Dulic, Lejla**, *Design, manufacturing and instrumentation of a displacement-controlled pressure-meter*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2019 **Koerner, Maxwell**, *Mechanical characterization of granite by nano-indentation and microscopy*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2019 **Smirnova, Elena**, *Simulation of steel-reinforced concrete beams repaired by epoxy injection*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2019, Fall 2019 **Huang, Celina**, *Bio-inspired subsurface networks: slime mold inspired networks and worm-ispired burrowing mechanics*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Summer 2019 **Nathan, Kishore**, *Design and construction of a worm-inspired geo-probe*, Summer research assistantship.

Spring 2019 **Bai, Zichen**, *Numerical model of stress distribution in hollow spheres with weakness planes*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2019 **Fish, Griffin**, *3D image analysis of pressure-controlled vessel expansion in sand*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2019 **Jiang, Victoria**, *Granite microstructure geometric and mechanical characterization: image analysis and nano-indentation*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2018, Spring 2019 **Gillani, Taj**, *Generation of aggregate shapes to model concrete microstructure*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2018 **Bhoodai, Mahesh**, *Slime mold network dynamics from image analysis*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2018, Fall 2018 **Cabral, Heidy**, *Slime mold growth experimental protocols and slime mold network analysis*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2018, Fall 2018 **Gu, Jingyi (Joy)**, *Discrete Element modeling of mode I fracture propagation in mortar with clusters of various shapes*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2018 **Khan, Zahra**, *XFEM modeling of fracture propagation in pre-stressed steel - reinforced concrete*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2018 **Luna, Marianna**, *Design, construction and testing of a root-inspired geo-probe*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring 2018 **An, Sehyeong**, *Slime mold growth experimental protocols and slime mold network analysis*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2017, Spring 2018, Fall 2018 **Lordkipanidze, Ilia**, *Experimental and numerical study of creep processes in granular salt under controlled conditions of temperature and humidity*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Fall 2017 **Olugbenga, Temiloluwa**, *Discrete Element modeling of sequential breakage in granular assemblies subject to confined comminution*, Georgia Tech VIP Bio-inspired network dynamics and geomechanics.

Spring–Sum. 2017 **Gupta, Aditya**, *Slime-mold inspired model of fracture patterns for optimal fluid flow*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2017 **Rouaud, Pierre**, *Experimental study of creep processes in granular salt under controlled conditions of temperature and humidity*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2017 **Gruba, Matthew**, *Discrete Element modeling and microstructure characterization of granular assemblies subject to confined comminution*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2017 **Djohan, Nicholas**, *Bio-inspired models of fluid flow: Steiner tree algorithm and fractal leaf venation systems*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2017 **Berlinsky, Alex**, *Discrete Element modeling and microstructure characterization of granular assemblies subject to confined comminution*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Fall 2016 **Innerarity, Jahvan**, *Experimental study of microstructure and poromechanical evolution of granular salt during temperature- and moisture- controlled creep tests*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Fall 2016 **Poliashenko, Eric**, *Experimental study of microstructure and poromechanical evolution of granular salt during temperature- and moisture- controlled creep tests*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Fall 2016 **Sabell, Kyle**, *DEM simulation of particle crushing*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Summer 2016 **Astorga, Briana**, *Bio-inspired optimization of fluid flow networks in the presence of topological heterogeneities*, Georgia Tech, Funded by the NSF Research Experiences for Undergraduates program.

Spring–Sum. 2016 **Yi, Andrew**, *Experimental study of salt consolidation under controlled conditions of stress, moisture and temperature*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation, Two-month stay at Ecole des Ponts Paris Tech funded by Arson's NSF IRES Award (CEE Gateways to France).

Sp. 2016–Sp. 2017 **Zeng, Jianming**, *Computational implementation and benchmark testing of an algorithm for generating Cohesive Zone elements around Finite Elements*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2016 **Wen, Haiqi**, *Salt microstructure image processing and analysis for the modeling of damage and healing during consolidation tests*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Spring 2016 **Chahal, Angad**, *Simulation of granular microstructure evolution during particle crushing*, Georgia Tech VIP Rock Damage Modeling and Energy Geostorage Simulation.

Fall 2015–Sp. 2016 **Khan, Ibrahim**, *Numerical study of size effects during single particle crushing*, Georgia Tech VIP Energy Geotechnology.

Fall 2015–Sp. 2016 **Watat, Leiticia**, *Experimental and theoretical modeling of salt damage and healing mechanics*, Georgia Tech VIP Energy Geotechnology.

Fall 2015 **Shankar, Anjali**, *Experimental and theoretical modeling of salt damage and healing mechanics*, Georgia Tech VIP Energy Geotechnology.

Fall 2015 **Olaiya, Daimler**, *Experimental and theoretical modeling of salt damage and healing mechanics*, Georgia Tech VIP Energy Geotechnology.

Fall 2015 **Haisian, Jeremy**, *Experimental and theoretical modeling of salt damage and healing mechanics*, Georgia Tech VIP Energy Geotechnology.

Fall 2015 **Ebin, Joshua**, *Numerical modeling of multi-scale fracture propagation in shale with application to hydraulic fracturing*, Georgia Tech VIP Energy Geotechnology.

Summer 2015 **Rozé, Julien**, *Micro-Macro Modeling of Stiffness and Permeability changes in Carbonates during Mechanical and Chemical Damage Propagation*, Three-month stay at Georgia Tech funded by the Foundation of Ecole des Ponts Paris Tech.

Summer 2015 **Fleury, Madeline**, *Micro-Macro Modeling of Stiffness and Permeability changes in Salt during Damage and Healing*, Three-month stay at Georgia Tech funded by the Foundation of Ecole des Ponts Paris Tech.

Spring 2015 **Varghese, Michael**, *Mechanics of particle crushing*, Georgia Tech VIP Energy Geotechnology.

Spring 2015 **Tuayev-Deane, Gregory**, *Mechanics of particle crushing*, Georgia Tech VIP Energy Geotechnology.

Spring–Fall 2015 **Calamur, Sarat Chander**, *Numerical modeling of single particle crushing*, Georgia Tech VIP Energy Geotechnology.

Spring 2015 **Bindra, Harmeet Singh**, *Salt damage and healing mechanics*, Georgia Tech VIP Energy Geotechnology.

Spring 2015 **Anderson, Nicholas**, *Numerical study of wellbore stability, flow rate and risks of explosions during hydraulic fracturing in shale: the Case of Dunkard Township, Pennsylvania*, Georgia Tech VIP Energy Geotechnology.

Fall 2014–Sp. 2015 **Benfield, Rebecca**, *Phenomenological and numerical model of creep damage around salt caverns used for geological storage*, Georgia Tech VIP Energy Geotechnology.

Fall 2014–Sum. 2015 **Armstead, Taylor**, *3D model of sodium diffusion in granular salt healing mechanics*, Georgia Tech VIP Energy Geotechnology, Two-month stay at Ecole des Ponts Paris Tech funded by Arson's NSF IRES Award.

Fall 2014–Sp. 2015 **Francis, Amanda**, *Environmental and Ethical Impacts of Hydraulic Fracturing: the Case of Dunkard Township, Pennsylvania*, Georgia Tech VIP Energy Geotechnology, Research funded by Arson's GT-FIRE Award.

Fall 2014 **Francis, Kyle**, *Particle crushing mechanics*, Georgia Tech VIP Energy Geotechnology.

Fall 2014 **Ecker, Sarah**, *Particle crushing mechanics*, Georgia Tech VIP Energy Geotechnology.

Summer–Fall 2014 **Veith, Austin**, *Experimental study of healing in granular salt during creep tests*, Georgia Tech VIP Energy Geotechnology.

Summer 2014 **Henry, Nicolas**, *Evolution of Rock Stiffness and Permeability during Reactive Flow*, Three-month stay at Georgia Tech funded by the Foundation of Ecole des Ponts Paris Tech.

Spring–Fall 2014 **Christopher, Todd**, *Study of shielding effects during particle crushing by a Discrete Element Method*, Georgia Tech VIP Energy Geotechnology.

Spring 2014 **Yoo, Rebecca**, *Calibration of DEM cluster models to simulate particle crushing*, Georgia Tech VIP Energy Geotechnology.

Fall 2013–Fall 2014 **Dutta, Manav**, *Determination of salt fabric descriptors during healing by machine learning algorithms*, Georgia Tech VIP Energy Geotechnology.

Fall 2013–Su. 2014 **Jeong, Jacob**, *Image post-processing applied to granular salt during healing*, Georgia Tech VIP Energy Geotechnology, Awarded the VIP research Prize in Spring 2014.

Fall 2013 **Asonibare, Ola**, *Mechanical modeling of healing in salt rock*, Georgia Tech VIP Energy Geotechnology.

Fall 2013 **Gong, Shaoshuai**, *DEM modeling of ballast particle crushing*, Georgia Tech VIP Energy Geotechnology.

Summer 2013 **Fikri, El Ghali**, *Emergent Phenomena Induced by Carbon Dioxide Sequestration*, Exchange program ENPC-Georgia Tech.

Summer 2011 **Berns, Erin**, *Experimental and Numerical Study of Heat-Exchanger Piles*, Texas A M University, Funded by the NSF Research Experiences for Undergraduates program.

Summer 2011 **Hong, Matthew**, *Permeability in Cracked Porous Rock*, Texas A M University, Funded by TAMU undergraduate research initiative.

Summer 2010 **Nida, Abenezer**, *Study of Consolidation in Damaged Porous Media*, Texas A M University, Funded by the NSF Research Experiences for Undergraduates program.

Visiting Students and Scholars (12 advisees)

2022 **Etcheverry, Matias**, *Deep learning algorithms to calcualte 3D fabric tensors from 2D images*, M.Sc. internship supervisor, Georgia Tech, February 2022 - June 2022.
M.Sc. from Ecole des Ponts Paris Tech (France), Mathematics and Computer Sciences, (Spring 2023)

2019–2021 **Wu, Zhuorui**, *Modeling fracture propagation and damage observed in rock and concrete compression tests*, Ph.D. research internship supervisor, GeorgiaTech, Nov 2019 - May 2021.
Ph.D. student from Tongji University funded by the Chinese Scientific Council

2020 **Jian, Guoqing**, *Finite Element simulation of burrowing sequences*, Independent research project advisor, Georgia Tech, Computer Sciences and Engineering, Vertically Integrated Projects (VIP) on Bio-inspired network dynamics and geomechanics, Fall 2020.

2018 **He, Xuzhen**, *Analytical and numerical models of stress redistribution around expanding cavities embedded in drained soil under biaxial stress*, Research internship supervisor, GeorgiaTech, Fall 2018.
Visiting post-doctoral fellow from the University of Natural Resources and Life Sciences (Vienna, Austria), Civil Engineering

2017 **Okubadejo, Olumide**, *3D image analysis of grain breakage during confined communition of zeolite*, Ph.D. research internship supervisor, GeorgiaTech, April 2017.
Ph.D. from L3SR (Grenoble, France), Civil Engineering, Spring 2018

2016 **Lin, Jia**, *Parametric study of the topology of root systems for soil reinforcement*, Research internship supervisor, GeorgiaTech, September 2016.
Visiting professor from the University of Natural Resources and Life Sciences (Vienna, Austria), Civil Engineering

2016 **Jeanneret, Romain**, *Mechanical model of dentin coupling stiffness to microstructure evolution: microstructure characterization, homogenization, experimental calibration and validation, numerical assessment*, M.Sc. internship supervisor, GeorgiaTech, February 2016 - August 2016.
M.Sc. from Ecole Centrale de Paris (France), Mechanical Engineering, Fall 2017

2016 **Switala, Barbara**, *Optimization of the topology of root systems for soil reinforcement and vegetated slope stability*, Ph.D. internship supervisor, GeorgiaTech, March 2016.
Ph.D. from the University of Natural Resources and Life Sciences (Vienna, Austria), Civil Engineering, Spring 2016

2015 **Le Bivic, Erwann**, *Microstructure characterization and self-consistent stiffness model of sane dentin*, M.Sc. internship supervisor, GeorgiaTech, Feb. 2015 - Aug. 2015.
M.Sc. from Ecole Centrale de Paris (France), Mechanical Engineering, Fall 2016

2014–2015 **Douma, Lisanne**, *Role of salt specific surface in healing processes driven by diffusion and pressure solution*, M.Sc. internship supervisor, GeorgiaTech, November 2014 - February 2015.
M.Sc. from the University of Utrecht (The Netherlands), Geosciences, Fall 2015

2012 **Le Pense, Solenn**, *A Thermodynamics-Consistent Model Coupling Elasto-Plasticity and Damage for Unsaturated Porous Media*, Ph.D. internship supervisor, GeorgiaTech, October-November 2012.
Ph.D. from Ecole des Ponts ParisTech (France), Geotechnics, Fall 2013

2011 **Dufour, Nathalie**, *Couplings Between Damage and Visco-Plasticity in Saturated Rocks*, Ph.D. internship supervisor, Texas A&M University, January-February 2011.
Ph.D. from Ecole Nationale des Travaux Publics de l'Etat (France), Geotechnics, Spring 2012

Dissertation Committee (32)

(2025) **Vasconcelos Da Senhora, Fernando**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. G. Paulino.

(2023) **Otsuki, Yu**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. Y. Wang.

(2023) **Zhao, Yumeng**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Dai.

(2023) **Dobbs, Alexandra**, Ph.D., Georgia Institute of Technology, Chemical Engineering, Advisor: Dr. B. Brettmann.

2022 **Loyola, Ana Carolina**, Ph.D., Universidade de Brasilia (Brazil) / Ecole des Ponts Paris Tech (France), Advisors: Drs. M. Porfirio Cordao Neto and J.-M. Pereira.

2022 **Jung, Sophie**, Ph.D., Ecole des Ponts Paris Tech (France), Advisors: Drs. A. Pouya, S. Ghabezloo and M. Bornert.

2022 **Karsai, Andras**, Ph.D., Georgia Institute of Technology, Physics, Advisor: Dr. D.I. Goldman.

2021 **Sisodiya, Mitul**, Ph.D., University of Colorado Boulder, Civil, Environmental and Architectural Engineering, Advisor: Dr. Y. Zhang.

2021 **Hemmati, Asef**, Ph.D., Ecole Centrale-Supélec (France), Advisors: Dr. E. Vennat and Dr. N. Schmitt.

2021 **Zhao, Tuo**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. G. Paulino.

2021 **Espinoza, Wilson**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Dai.

2021 **Azabou, Mejda**, Ph.D., University Paris Sciences et Lettres / Ecole des Mines Paris Tech (France), Advisors: Dr. A. Rouabhi and Dr. L. Blanco-Martin.

2021 **Lee, Junghwoon**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Burns.

2020 **Coarita-Tintaya, Ever-Dennys**, Ph.D., Université de Lorraine (France), Mechanics - Civil Engineering, Advisors: Dr. S. Mountaka and F. Golfier.

2020 **Ibru, Timothy**, Ph.D., Georgia Institute of Technology, Mechanical Engineering, Advisor: Dr. A. Antoniou.

2019 **Schimmel, Mariska**, Ph.D., University of Utrecht (The Netherlands), Advisor: Dr. C.J. Spiers.

2018 **Trivellato, Edoardo**, Ph.D., Ecole des Ponts Paris Tech (France), Geomechanics, Advisor: Dr. A. Pouya.

2018 **Wirth, Xenia**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Burns.

2017 **Won, Jongmuk**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Burns.

2017 **Papachristos, Timos**, Ph.D., Université Grenoble Alpes (France), Geomechanics, Advisor: Dr. F. Donzé.

2016 **Faroughi, Salah**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. C. Huber.

2016 **Gray, Kip**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. S. Burns.

2015 **Muhammad, Nawaz**, Ph.D., University of Utrecht (The Netherlands), Geosciences, Advisor: Dr. C.J. Spiers.

2015 **Mayercsik, Nathan**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. K. Kurtis.

2014 **Song, Song-Hun**, Ph.D., Georgia Institute of Technology, Civil and Environmental Engineering, Advisor: Dr. J.C. Santamarina.

2014 **Gaudinez, Aileen**, Ph.D., Texas A&M Univ., Geophysics, Advisor: Dr. F. Chester.

2013 **Le Pense, Solenn**, Ph.D., Ecole des Ponts Paris Tech (France), Geomechanics, Advisor: Dr. A. Pouya.

2013 **Ulrich, Christopher**, M.Sc., Texas A&M Univ., Geology, Advisor: Dr. A. Kronenberg.

2012 **Arbind, Archana**, M.Sc., Texas A&M Univ., Mech. Eng., Advisor: Dr. J.N. Reddy.

2012 **Song, Ahran**, Ph.D., Texas A&M Univ., Civil Eng., Advisor: Dr. Z. Medina-Cetina.

2012 **You, Jung Hwan**, Ph.D., Texas A&M Univ., Civil Eng., Advisors: Drs. C. Aubeny and G. Biscontin.

2011 **Esmailzadeh, Saba**, Ph.D., Texas A&M Univ., Civil Eng., Advisor: Dr. Z. Medina-Cetina.

Teaching and Education

Instruction of graduate courses

2020–present **Theoretical Geomechanics**, Georgia Tech.

2020–present **Computational Methods in Mechanics**, Georgia Tech.

2013–present **Finite Element Method for elastic porous media**, Georgia Tech.

2014–2017 **Tunneling and Mining: Mechanics and Engineering**, Georgia Tech.

2010–2012 **Theory of Finite Element Analysis**, Texas A&M University.

Instruction of double-listed courses (open to grad and undergrad students)

2022–present **Diversity, Equity and Inclusion in Civil and Environmental Engineering**, *seminar-based course with roundtables and essay assignments*, Georgia Tech.

Instruction of undergraduate courses

2013–present **Mechanics of Deformable Bodies**, *junior level*, Georgia Tech.

2011–2012 **Intro to Geotechnical Engineering**, *senior level*, Texas A&M Univ.

2010–2011 **Mechanics of Materials**, *junior level*, Texas A&M University.

Tutoring

2016–2007 **Continuum Mechanics**, *senior undergraduates*, ENPC, France.

2007 **Advanced Geotechnical Projects**, *graduate engineering students*, ENPC, France.

Outreach

07/2021 **Roundtable of the National Summer Transportation Institute**, *Arizona State University (virtual)*, Outreach event for high school students interested in engineering.

09/2019 **Panel on sustainability in engineering**, *Inauguration of the Kendela building at Georgia Tech*.

09/2015 **Presentation and discussion on hydraulic fracturing with 6-th grade students**, *Memorial Middle School, Conyers, GA*.

Engineering Education Workshops

2018 **Workshop on LGBTQ inclusion in engineering sponsored by the U.S. National Science Foundation**, *Co-organizer*.

In order to assess the impact of heterosexism and heteronormativity in the engineering identity, an NSF-funded workshop took place at Georgia Tech on Thursday March 1st 2018 (afternoon) and Friday March 2nd 2018 (all day) and was attended by 14 engineering faculty and sociology faculty with expertise with inclusion in engineering from across the United States. The primary goal of the workshop was to describe the factors that contribute to a welcoming and affirming environment for LGBTQ engineering students as well as barriers to their full participation in the discipline. Issues such as the climate for LGBTQ faculty and students, diversity and inclusion efforts for the LGBTQ community vs. those for women and other underrepresented groups, and future actions for addressing climate and inclusion were discussed and addressed.

2015 **Frontiers of Engineering Education Symposium sponsored by the National Academies of Engineering (NAE)**, *Selected participant*.

The symposium is designed to recognize accomplishment, facilitate learning, and broaden collaboration of innovative practices in engineering education. Each year FOEE brings together a select group of outstanding U.S. engineering educators, nominated by their respective engineering deans and members of the academy, to actively participate in the Symposium and then return to their individual campuses to effect change

2014 **International educational workshop sponsored by the U.S. National Science Foundation**, *Lead organizer*.

The workshop, held at the University of Cambridge (UK) on September 5-6, 2014, addressed the new skill set needed by geotechnical engineers to solve the multi-scale, multi-physics problems faced by modern technology. 44 faculty and graduate students participated in this workshop, with a balanced representation of U.S. and European leading institutions. Participants assessed strategies for training and development of graduate and undergraduate students, and identify efficient teaching methods to create an innovative skills toolkit at the undergraduate level. In addition to curricular recommendations, working groups proposed in-class activities that could be integrated in a module at the undergraduate level

Boards, Committees and Panels

Leadership in Editorial Boards

2023–present **Editorial Board Member**, Scientific Reports, Springer Nature.

At *Scientific Reports*, editorial board members play the role of an associate editor. Handling about 2 papers per month.

2022–present **Associate Editor**, Open Geomechanics, ALERT Geomaterials.

Handling about 5 papers per year. The editorial work includes a full review of the paper and of the experts' reports, which are published along with all the versions of the accepted manuscript.

2019–present **Associate Editor**, Journal of Engineering Mechanics, American Society of Civil Engineers.
Handling about 20 articles per year. Co-editor of the special collection on "Mechanics of self-healing materials and structures" with Tal Cohen and Nima Rahbar.

2018–present **Associate Editor**, Rock Mechanics and Rock Engineering, Springer.
Handling 150 - 200 articles per year.

2021–2022 **Diversity Advocate**, Applied Mechanics Reviews, American Society of Mechanical Engineers.
One of two diversity and inclusion fellows appointed upon competitive application, in an editorial board of 11 members.

Membership in Editorial Boards

2023–present **Editorial Board Member**, Acta Geotechnica, Springer.

2022–present **Editorial Board Member**, Revue Française de Géotechnique, EcoSciences.

2022–present **Editorial Board Member**, Computers and Geotechnics, Elsevier.

2021–present **Editorial Board Member**, International Journal of Geomechanics, American Society of Civil Engineers.

2019–present **Editorial Board Member**, International Journal of Rock Mechanics and Mining Sciences, Elsevier.

2019–present **Editorial Board Member**, Journal of Numerical and Analytical Methods in Geomechanics, Wiley.

2018–present **Editorial Board Member**, Journal of Rock Mechanics and Geotechnical Engineering, Elsevier.

2015–present **Editorial Board Member**, Journal of Rock Mechanics and Rock Engineering, Springer.

Leadership in Conference Organization (Conference Chair)

2023 **Co-Chair**, Conference of the Engineering Mechanics Institute, Georgia Institute of Technology, 6-9 June 2023. Co-chair: Yang Wang (Georgia Tech).
Yearly conference of the Engineering Mechanics Institute (EMI) of the American Society of Civil Engineers (ASCE). 830 participants, 65 mini-symposia (sessions), 6 keynote lectures planned. Over $20k donations received from Georgia Tech entities and from industry. Introduced new events in the conference, including a LGBTQ+ safe space training, a workshop for the professional development of newly tenured faculty members, and a student/industry mixer. Won an appreciation award jointly with Dr. Yang Wang for "outstanding service and dedication as co-chairs of the EMI Conference 2023 at Georgia Tech, Atlanta, GA, June 6-9, 2023".

2021 **Co-Chair**, Bio-Bazant Conference of Engineering Mechanics and Physics of Porous Materials, Northwestern University, June 1-3, 2021. Co-chairs: Gianluca Cusatis (Northwestern University) and Franz-Joseph Ulm (MIT).
This symposium was a one-time fusion of the Biot Poromechanics conference (held every four years) and of the Concreep Conference (held every two years).

The conference was held virtually. Over 250 abstracts were submitted, and 270 people from over 20 countries located in 5 continents participated. The conference featured an opening lecture by Prof. Zdenek Bazant (Northwestern University), parallel sessions organized in seven tracks, 5 plenary debates and a closing lecture by Prof. Henri Van Damme (formerly at ESPCI in Paris, France). All the track presentations were pre-recorded, but the questions and answers were live. Plenary lectures and debates were live. The whole conference was recorded, and the plenary lectures and debates were made publicly available shortly after the conference.

A new concept: Plenary scientific debates with participation of the audience. For each debate, a motion (e.g., *Darcy's law is useless at pore scale; Reactive tailings: all you need is strength; Multi-scale models cannot be quantitative*) was discussed by two scholars, who each spoke for 15 minutes, before addressing questions by the audience. The public then voted for or against the motion and interactively answered related questions by means of a web-based polling tool that displayed the answers in real time. Debaters were invited to write a joint review paper with or without the co-authorship of their moderator in the *Journal of Engineering Mechanics*.

A new concept: Open-access video proceedings. The video talks and associated abstracts were published on *Figshare* under a Creative Commons license in the form of proceedings with DOI number. The work became searchable (by title, authors, disciplines of the work presented, keywords, funding information) and citable at the time the *Figshare* repository was made public (shortly after the conference), but the video file associated to the DOI number of a contribution became accessible after an embargo period of 6 months. By licensing research outputs under CC-BY, *Figshare* ensures that the published research is openly available and lets others distribute, remix, tweak, and build upon the published work (even commercially) as long as they credit authors for the original creation in the form of a citation.

More towards open access: journal publications. Seven track contributions were selected for a possible journal article in *Open Geomechanics*. Two teams of authors accepted to submit a full paper. These manuscripts are currently under review.

Conference Session Chairs

2017 **Chair**, Session on Geomechanics Modeling, 6th Biot conference on Poromechanics, Paris, France, 9-13 July 2017.

2017 **Co-Chair**, Session on Numerical Modeling in Mining, 51st Symposium of the American Rock Mechanics Association (ARMA), San Francisco, California, June 25-28, 2017.

2015 **Chair**, Session on Salt Mechanics, 49th Symposium of the American Rock Mechanics Association (ARMA), San Francisco, California, June 28 - July 1, 2015.

2013 **Co-Chair**, Session on Measuring, Imaging, and Computing to Probe Multi-scale Rock Processes (MR009) at the 2013 AGU Fall Meeting (American Geophysical Union), San Francisco, CA, December 9-13, 2013.

2013 **Chair**, Mini-Symposium on Constitutive modeling of damage and healing in porous media at the 5th Biot conference on Poromechanics, Vienna, Austria, July 10-12, 2013.

2012 **Co-Chair**, Symposium Session IV.8 (1/3) Multiscale Characterization and Modeling of Geomaterials at the 49th Annual Meeting of the Society of Engineering and Science, Georgia Tech, Atlanta, GA, Oct. 10-12, 2012.

Leadership in Scientific Advisory Committees

2019 **Scientific Committee Member**, ASCE Engineering Mechanics Institute, CalTech, CA, June 18-21, 2019. Co-lead of the session track on Bio-inspired engineering and Bio-materials.

2015 **Organizing Committee Member**, Workshop: Reducing the Impact of Hydraulic Shale Fracturing and Natural Gas Drilling on Environments, April 20-21, 2015, University of Arkansas at Little Rock, with the support of the U.S. National Science Foundation (NSF grant CBET-1464062).

2015 **Lead-organizer**, Workshop: Integrating Ethics and Engineering in the Classroom: The Case of Hydraulic Fracturing, April 8-10, 2015, Georgia Institute of Technology, Atlanta, Georgia, with the financial support of the GT-FIRE program and the Sparks Forum. Guest Lecturer: Sidney Green, NAE.

2014 **Lead-organizer**, Workshop: Risks and Policies of Hydraulic Fracturing: Assessment and Deliberation, November 13-14, 2014, Georgia Institute of Technology, Atlanta, Georgia, with the financial support of the GT-FIRE program and the Sparks Forum. Five external speakers invited.

2014 **Scientific Advisory Committee Member**, 48th Symposium of the American Rock Mechanics Association (ARMA), Minneapolis, Minnesota, June 1-4, 2014. Co-organizer of the Salt Mechanics Sessions.

Technical Panels

2022 **Panelist**, EMI 2022 Conference: Education in Mechanics (Johns Hopkins University, MD, May 31 - June 3, 2022).

2013 **Panelist**, Workshop at CalTech: Heterogeneities Across Scales in Geomechanics (CalTech, Pasadena, California, June 19-23, 2013).

2012 **Panelist**, International US-Poland Workshop on Multiscale Computational Modeling of Cementitious Materials (Krakow, Poland, October 18-19, 2012) – sponsored by U.S. National Science Foundation.

Leadership in International and National Committees

2022–present **Elected Vice Chair**, ASCE Engineering Mechanics Institute, Education Committee.

2019–2021 **Elected Chair**, ASCE Engineering Mechanics Institute, Poromechanics Committee, The purpose of the EMI Poromechanics Committee is to promote fundamental and applied research in the mechanics of porous materials using observational, analytical, and computational techniques. Committee members (usually around 50 members) regularly organize conference sessions, workshops and special issues.

2018–2019 **Elected Vice Chair**, ASCE Engineering Mechanics Institute, Poromechanics Committee.

Membership in International and National Committees

2023–present **Selected member**, ASCE Engineering Mechanics Institute, Committee on Machine Learning in Mechanics.

2022–present **Selected member**, ASCE Engineering Mechanics Institute, Education Committee.

2015–present **Selected member**, ASCE Engineering Mechanics Institute, Poromechanics Committee.

2013–present **Member**, International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), Technical Committee TC 308: Energy Geotechnics.

2011–present **Member**, ASCE Geo-Institute, Rock Mechanics Committee.

2011–present **Member**, ASCE Geo-Institute, Computational Geomechanics Committee.

2013–2017 **Selected Member**, ARMA Future Leaders program.

Leadership in Institutional Committees

2020–2021 **Founding Member and Chair**, Georgia Institute of Technology, School of Civil and Environmental Engineering, Committee on Diversity and Inclusion.

2019–2021 **Chair**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Committee for International Initiatives.

2018–2019 **Chair**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Faculty Search Committee.

Membership in Institutional Committees

2022–present **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Committee for Reappointment, Promotion and Tenure.

2020–present **Founding Member**, Georgia Institute of Technology, School of Civil and Environmental Engineering, Committee on Diversity and Inclusion.

2018–present **Liaison**, Georgia Institute of Technology, School of Civil and Environmental Engineering liaison to the Lesbian, Gay, Bisexual, Transgender, Questioning, Intersex and Allies (LGBTQIA) center.

2018–present **Member**, Georgia Institute of Technology, Global Change Program, Faculty Advisory Board.

2017–present **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Promotion and Tenure Scientific Area Committee.

2019–2022 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Committee for International Initiatives.

2019–2020 **Member**, Georgia Institute of Technology, College of Engineering, Strategic Planning Committee - Education task force.

2018–2020 **Member**, Georgia Institute of Technology, College of Engineering, Diversity and Inclusion Council.

2012–2019 **Coordinator**, Georgia Institute of Technology, Geosystems Engineering group, Comprehensive Examination.

2015–2019 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Faculty Search Committee.

2013–2019 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Undergraduate Studies Committee.

2017–2018 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, School Chair Search Committee.

2016–2017 **Liaison**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Serve-Learn-Sustain program.

2012–2013 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Graduate Studies Committee.

2012–2013 **Member**, Georgia Institute of Technology, School of Civil & Environmental Engineering, Strategic Planning Committee.

2010–2012 **Member**, Texas A&M University, Department of Civil Engineering, Computational Institute.

2010–2012 **Member**, Texas A&M University, College of Engineering, Energy Engineering Institute.

2010–2012 **Member**, Texas A&M University, College of Engineering, Energy Club.

2007–2008 **Graduate student representative**, Navier Laboratory, ENPC.

2007–2008 **Graduate student representative**, Scientific Board of the Doctoral School "Materials, Buildings, Durability, Environment and Structures", Paris-Est University.

2006–2008 **Graduate student representative**, Board of Teaching and Research, ENPC.

Technical Reviews

Proposal Review Panels

U.S. National Science Foundation, Engineering for Civil Infrastructure unsolicited program, served once.

U.S. National Science Foundation, Geomechanics and Geomaterials CAREER program, served once.

U.S. National Science Foundation, Geomechanics and Geomaterials unsolicited program, served once.

European Commission Research Executive Agency, Marie Sklodowska-Curie Actions program, served twice, remote panels.

Reviews for 19 Funding Programs

U.S. National Science Foundation (NSF), Engineering for Civil Infrastructure program (NSF CMMI-ECI).

U.S. National Science Foundation (NSF), Geomechanics and Geomaterials program (NSF CMMI-GEOM).

U.S. National Science Foundation (NSF), Mechanics of Materials program (NSF CMMI-MOM).

U.S. National Science Foundation (NSF), Geophysics program (NSF EAR-Geophysics).

U.S. National Science Foundation (NSF), Tectonics program (NSF EAR-Tectonics).

U.S. National Science Foundation (NSF), Marine Geology and Geophysics program (NSF EAR-OCE).

U.S. National Science Foundation (NSF), Physiological Mechanisms and Biomechanisms (NSF division of Integrative Organismal Systems (IOS).

U.S. Defense Threat Reduction Agency (DTRA), Basic Research for Combating Weapons of mass destruction program.

U.S. Department Of Energy, Office of Science Graduate Fellowship Program (DOE-SGFP).

U.S. Department Of Energy, Technology Commercialization Funds (DOE-TCF).

U.S. Chemical Society (ACS), Petroleum Research Funds (PRF).

U.S. Association for the Advancement of Science (AAAS), Research Competitiveness Program.

Canada Foundation for Innovation.

Netherlands Organisation for Scientific Research.

Swiss National Science Foundation.

Czech Science Foundation.

Hong Kong University Grants Committee (UGC).

Georgia Tech, U.S. NSF Partnerships for International Research & Education (PIRE).

Georgia Tech, President's Undergraduate Research Awards (PURA) program.

Reviews for 46 Referred Journals

Acta Geotechnica, Springer.

Canadian Geotechnical Journal, Canadian Science Publishing.

Computer Methods in Applied Mechanics and Engineering, Elsevier.

Computers and Geosciences, Elsevier.

Computers and Geotechnics, Elsevier.

Energies, MDPI Open Access Journals.

Environmental Geotechnics, ICE - Thomas Telford.

European Journal of Civil Engineering, Taylor & Francis.

Geomechanics for Energy and the Environment, Elsevier.

Geophysical Journal International, Oxford Journals.

Geophysical Research Letters, AGU.

Geotechnical and Geological Engineering, Springer.
Geotechnical Testing Journal, ASTM International.
Géotechnique, ICE - Thomas Telford.
Géotechnique Letters, ICE - Thomas Telford.
Granular Matter, Springer.
Int. Journal for Numerical Methods in Engineering, Wiley.
International Journal of Computational Methods, World Scientific.
International Journal of Damage Mechanics, Sage.
International Journal of Geomechanics, ASCE.
Int. Journal of Numerical and Analytical Methods in Geomechanics, Wiley.
Int. Journal of Numerical Methods for Heat and Fluid Flow, Emerald Research.
Int. Journal of Rock Mechanics and Mining Sciences, Elsevier.
International Journal of Solids and Structures, Elsevier.
Italian Geotechnical Journal, Italian Geotechnical Society.
Journal of the American Ceramic Society, Wiley.
Journal of Computational and Applied Mathematics, Elsevier.
Journal of Computing in Civil Engineering, ASCE.
Journal of Engineering Mechanics, ASCE.
Journal of Geophysical Research - Solid Earth, AGU.
Journal of Porous Media, Begell House.
Journal of Professional Issues in Engineering Education and Practice, ASCE.
Journal of Rock Mechanics and Geotechnical Engineering, Elsevier.
Journal of the Mechanics and Physics of Solids, Elsevier.
Materials Science and Engineering B, Elsevier.
Meccanica, Springer.
Mechanics Research Communications, Elsevier.
Open Geomechanics, Centre Mersenne.
Physics of Fluids, AIP Publishing.
Powder Technology, Elsevier.
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, The Royal Society Publishing.
Rock Mechanics and Rock Engineering, Springer.
Soils and Foundations, Japanese Geotechnical Society.
Springer Plus, Springer.
Theoretical and Applied Fracture Mechanics, Elsevier.
Zeitschrift für Angewandte Mathematik und Mechanik, Wiley.

Reviews for 13 Conference Proceedings

2019 **Conference of the Engineering Mechanics and Geotechnical Instututes**, ASCE.
2017 **US Rock Mechanics/Geomechanics Symposium**, ARMA.
2017 **6th Biot Conference on Poromechanics**, ASCE.
2016 **US Rock Mechanics/Geomechanics Symposium**, ARMA.
2016 **GeoFrontiers**, ASCE.
2015 **US Rock Mechanics/Geomechanics Symposium**, ARMA.
2015 **Mechanical Behavior of Salt VIII**.
2014 **US Rock Mechanics/Geomechanics Symposium**, ARMA.
2014 **GeoCongress**, ASCE.
2013 **5th Biot Conference on Poromechanics**, ASCE.
2013 **US Rock Mechanics/Geomechanics Symposium**, ARMA.
2012 **GeoCongress**, ASCE.
2011 **GeoRisk**, ASCE.

Professional Memberships

Membership in International Societies

2013–present **ISSMGE**, International Society for Soil Mechanics and Geotechnical Engineering.
2010–present **InterPore Network**, Conference and discussions on porous media.
2009–present **IACMAG**, International Association for Computer Methods and Advances in Geomechanics, International conferences, advanced scientific seminars.
2006–present **Alumni Organization of Ecole Nationale des Ponts et Chaussées**, France.

Membership in U.S. Societies

2021–present **ASME**, American Society of Mechanical Engineers.
2020–present **Sigma Xi**, American Scientific Research Honor Society.
2013–present **ARMA**, American Rock Mechanics Association.
2010–present **AGU**, American Geophysical Union.
2010–present **ASCE**, American Society of Civil Engineers.
Affiliate Member (2010-2018), Member (2018-present)

Membership in Research Centers

2015–present **Center for Bio-inspired and Bio-mediated Geotechnics (CBBG)**, *NSF Engineering Research Center*.
The CBBG gathers scholars from Arizona State University, Georgia Tech, New Mexico State University and UC Davis, who design geotechnical systems based on biological models. Applications include hazard mitigation, infrastructure and construction, and erosion control. The CBBG is an Engineering Research Center funded by the U.S. National Science Foundation

2014–present **Center for Ethics &Technology (CET)**, *Georgia Institute of Technology*.
The CET is dedicated to fostering a culture of critical inquiry and deliberation about ethical issues that arise in relation to technological systems. The Center has a special focus on helping members of the Georgia Tech campus and beyond to acquire tools for recognizing, analyzing and responding to ethical issues, ranging from matters of research ethics through decision making in professional contexts to consideration of the social and environmental implications of innovation

2012–present **Bio-Engineering (Bio-E) Program**, *Georgia Institute of Technology*.
Graduate program across Georgia Tech Colleges of Engineering, Computing, Sciences, and Architecture as well as Emory University School of Medicine. Enrolled students create their own curriculum and work with 90+ participating program faculty members on research areas including biomaterials, biomechanics, nanotechnology, neuro-engineering, tissue engineering, biofuels, energy, environment, bio-remediation

2011–present **Center for Tectonophysics**, *Texas A&M University*.
Interdisciplinary research group initiated to undertake basic and applied research of both natural and man-induced rock deformation processes, and to provide research support, training, and mentoring of graduate students and post-doctoral fellows pursuing advanced studies in the area of tectonophysics

Synergetic Activities

Organization of International Scientific Exchanges

2012–present **CEE Gateways to France**, *Georgia Tech*.
Program that builds long-term collaborations between Georgia Tech (GT) professors and faculty from top engineering schools of the Paris area through regular GT student internships in France and mutual visits. Funding from the National Science Foundation (Grant no. 1357908, 2014-2019; Grant no. 1854030, 2019-present). 25 internships funded since 2014.

Joint Geotechnics-Geophysics Events

2013 **4G workshops in Geomaterials, Geology, Geophysics and Geosystems**, *Workshops organized collaboratively by Georgia Tech School of Civil & Environmental Engineering (CEE) and Georgia Tech School of Earth & Atmospheric Sciences (EAS)*.
Presentations and roundtables on major issues in the current state of knowledge in both the Earth Sciences and Geosystems Engineering communities. Funding from Georgia Tech.

2010–2012 **Cross-disciplinary seminars**, *Texas A&M University*.
Seminar series in Geology, Geophysics and Geotechnical Engineering, with faculty members of the Department of Geology & Geophysics

Mentoring Activities

2013–present **Lead-PI of the Vertically Integrated Program (VIP) on Computational modeling and visualization for geomechanics**, *Georgia Tech*.

Undergraduate students (sophomores, juniors and seniors) are mentored by Dr. Arson and her graduate students, and by each other. Based on their participation, technical accomplishments and team management contributions, undergraduate students earn course credit that counts towards their degree. The size and structure of a VIP enable project continuity and interdisciplinary student participation

2012 **Teaching mentor**, *Texas A&M University*.

Team-teaching of the senior undergraduate course "Introduction to Geotechnical Engineering" with a Ph.D. candidate. Preparation of joint lectures and assignments. Audit of mentee"s lectures and review of teaching methods

Promotion of the Participation of Under-Represented Groups

2015–present **LGBTQIA Ally and Safe Space member**, *Georgia Tech*.

Point of contact for students who belong to LGBTQIA communities (Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Intersex, Asexual/Ally). Trained by Georgia Tech LGBTQIA Resource Center (Safe Space training: November 2015, Trans 101: November 2019, Level Up Allyship: 2021–2022). Liaison between the School of Civil and Environmental Engineering and the LGBTQIA resource center. Mentor to Georgia Tech graduate students who identify as LGBTQ+.

2011–2012 **Faculty mentor for veteran students**, *Texas A&M University*.

Trained by the Veteran Services Office at Texas A&M University (Serving those who have served, September 2011)

2010–2012 **Member of the Civil Eng. Women Student Mentoring Group**, *Texas A&M Univ.*

Co-organizer of events to help women students of Civil Engineering and Ocean Engineering to prepare for successful professional careers. Participation in formal and informal meetings to improve the sense of community for women students enrolled in Civil Engineering

Training: Certified Online Courses

Artificial Intelligence

09/2020 **CS50's Introduction to Artificial Intelligence with Python**, *Harvard University*.

edX Course - 7 weeks
Certificate: 7ed1e0caddb9426ba4d90d2a469de670

Graph search algorithms • Classification • Optimization • Reinforcement learning • Neural Networks • Python Machine Learning libraries • Game-playing engines • Handwriting recognition • Machine translation and Language processing

06/2020 **Deep Learning**, *deeplearning.ai*.

Coursera Specialization (5 mini courses) - 16 weeks
Certificate: coursera.org/verify/specialization/4ZYNW3Y648BT

Neural Networks and Deep Learning: Building, training and applying fully connected deep neural networks; Implementation of efficient (vectorized) neural networks; Key parameters in a neural network's architecture • Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization: Optimization algorithms; Hyperparameter tuning; Batch normalization; Programming frameworks - TensorFlow • Structuring Machine Learning Projects: Optimizing metrics; Train/dev/test data sets; Avoidable bias; Error analysis; Multi-task learning; End-to-end learning • Convolutional Neural Networks: Strided Convolutions; Pooling Layers; ResNets; Inception Networks; Detection algorithms: landmarks, bounding boxes, intersection over union, non-max suppression, anchor boxes, YOLO algorithm; Face recognition: Siamese network, triplet loss, face verification and recognition; Neural style transfer • Sequence Models: Recurrent Neural Networks; Natural Language Processing & Word embeddings; Sequence models & Attention Mechanisms

06/2020 **Machine Learning**, *Stanford University*.

Coursera Course - 11 weeks
Certificate: coursera.org/verify/X7VXMPHETXQ8

Linear regression with one variable • Multi-variable linear regression • Logistic regression • Regularization • Neural Networks • Support Vector Machines • Unsupervised learning, k-means algorithm • Dimensionality reduction, PCA • Anomaly detection • Recommender systems • Large scale machine learning

Fundamentals of Computer Science

12/2020 **Introduction to Computational Thinking and Data Science**, *Massachusetts Institute of Technology*.

edX Course - 9 weeks
Certificate: 9a16c89ac10e4679ba34cc749492aebf

Optimization and Knapsack problem • Decision tree and dynamic programming • Graph problems • Stochastic thinking • Random walks • Inferential statistics • Monte Carlo simulations • Sampling and standard error

08/2020 **Introduction to Computer Science and Programming Using Python**, *Massachusetts Institute of Technology*.

edX Course - 9 weeks
Certificate: c141a2462bae4172b462453cdc4b3623

Python basics • Simple programs • Functions • Tuples and lists • Dictionaries • Testing and debugging • Exceptions and assertions • Classes and inheritance (object oriented programing) • Computational complexity • Searching and sorting algorithms • Plotting

06/2020 **CS50's Introduction to Computer Science**, *Harvard University*.

edX Course - 12 weeks
Certificate: 7ff1726f046d4ec3bd90637fd1894c94

Abstraction • Algorithms • Data Structures • Encapsulation • Resource Management • Security • Software Engineering • Web Development • C • Python • SQL • JavaScript • CSS • HTML • Applications in biology, cryptography, finance, forensics and gaming.

05/2020 **Python for Everybody**, *University of Michigan*.
Coursera Specialization (4 mini courses) - 20 weeks
Certificate: coursera.org/verify/specialization/5QUFWJQ64P7S

Basic Python synthax • Python data structures • Using Python to access web data • Using databases with Python

Law and Sociology

12/2020 **Gender and Sexuality: Applications in Society**, *University of British Columbia*.
EdX Course - 6 weeks
Certificate: 153324d2f6774bffbbf3797582777928

Beyond binaries: continuum of identities, intersectionality • History: parallel histories and personal narratives, contested narratives • Pop culture and art: critically reading pop culture and art, past to present representations • Health: health framing, equity health and illness at the margins • Rights and recognition: laws and its limits rights and reconitions at the margins societal issues • Creating respectful and inclusing environments: allyship, institutions, social justice

11/2020 **Introduction to Environmental Law and Policy**, *University of North Carolina at Chapel Hill*.
Coursera Course - 6 weeks
Certificate: coursera.org /verif y/3VT8Q7HZJVTV

Common-Law Approaches to Environmental Problems • Property and the Environment • Environmental Impact Analysis and Endangered-Species Protection • Risk Analysis and Toxic Substances: Pesticides, Trade Disputes over Synthetic Hormones, and the Cleanup of Contaminated Sites • Environmental Justice, Water Pollution, Claims to a Human Right to Drinking Water, Fracking, and Insights from an Economic Model of Regulatory Cost-Effectiveness • Pollution and Climate Change

10/2020 **Intellectual Property Law**, *University of Pennsylvania*.
Coursera Specialization (4 mini courses) - 16 weeks
Certificate: coursera.org/verify/specialization/NB54QEMVAU35

Intellectual Property Law in the US: judiciary system, procedures, costs, strategies, case studies • Copyright Law: the idea/expression dichotomy, cretria of originality and creativity, right of reproduction, public distribution, adaptation, public performance and public display, authorship and moral rights, fair use • Trademark Law: trademark criteria, strategy and enforceability, trademark searches, application, maintenance, infringement • Patent Law: definition of a patent, structure of a patent document, institutional structure, standards of patentability, patent claims, doctrine of equivalents, infringement, remedies

10/2020 **A Law Student's Toolkit**, *Yale University*.
Coursera Course - 3 weeks
Certificate: coursera.org /verif y/3Z2JPA J69M LA

Ex Ante vs. Ex Post • Normative vs. Positive • Default vs. Mandatory Rules • Rules vs. Standards • Paternalism and Externalities • Property vs. Liability Rules • Exit Voice • Substance vs. Procedure • Acoustic Separation • Caose Theorem • Calabresis's Cost of Accidents • Marginalism • Veil of Ignorance • Behavioral Biaises • Search, Experience and Credence • Information Rules • Standards of Review • Burden of Proof • Monetary Judgements • Ad Hominem Arguments and Slippery Slope • Objections • Reading a Statute • Briefing a Case

On-campus Training

Allyship and professional development

2021-2022 **Emerging Leaders Program**, Development program sponsored by the Office of the Provost's Office at the Georgia Institute of Technology. Ten workshops and one retreat (see Honors and Awards section).

2021-2022 **Level Up**, An advanced allyship course. Ten sessions of 1h30 on: Historical LGBTQ+ foundations in the USA; Trans 201 (allyship to trangender people); Queer people of color and racial justice in queer communities; Intersectionality; Advanced allyship concepts; Intersex 101 (allyship to intersex people); Non-Monosexuality; Legislative Advocacy; LGBTQ+ historic sites of Atlanta ("Queer Atlanta Bus Tour").

2019 **Trans 101**, Half day workshop organized by Georgia Tech LGBTQIA resource center on gender identity, gender expression, pronouns, transgender identities and gender transition.

2019 **Suicide Prevention**, Question-Persuade-Refer (QPR) training provided by the Office of the Dean of Students at Georgia Tech.

2018 **Adaptive Leadership**, Three half-day workshops supported by Georgia Tech ADVANCE program. Topics covered included leadership styles, reflection on purposes, categories of values, examples of servant leadership.

2015 **Safe Space**, Half day workshop organized by Georgia Tech LGBTQIA resource center on gender identity, sexual orientation, resources for LGBTQ+ communities and strategies to be an ally.

Mandatory trainings

2022 **Implicit Bias**, Workshop supported by Georgia Tech ADVANCE program, mandatory for all faculty who serve in search and promotion committees, defining explicit vs. implicit bias and providing tools to design rubrics to evaluate faculty candidates, organize searches, and avoid biais in recommending candidates or examining applications.

2018 **General Biosafety**, In-person training provided by the Environmental Health and Safety (EHS) services at Georgia Tech.

2016 **Implicit Bias**, Workshop supported by Georgia Tech ADVANCE program, mandatory for all faculty who serve in a search committee, providing tools to avoid biais in recommending candidates, examining applications and asking questions to interviewees.