Fangzhou Albert Liu, Ph.D.

Assistant Professor
Department of Civil and Environmental Engineering
University of Alberta

I. EDUCATION

Georgia Institute of Technology   Atlanta, GA, USA

Ph.D.	Geosystems Engineering	2019
M.Sc.	Computational Science and Engineering	2019
M.Sc.	Civil and Environmental Engineering	2016

University of Bristol   Bristol, UK

M.Eng.	Civil Engineering	2011

II. RESEARCH INTEREST

- Natural and human-induced hazards: failure mechanism of landslides
- Geomechanics: fundamental mechanical/physical/thermal behaviours of soils, CSSM, permafrost
- Testing techniques: lab/field instrumentation, wave char., centrifuge modelling, GPR
- Geo-visualization: X-ray CT, remote sensing, LiDAR, UAV, AR/VR, disaster recon.
- Resilient infrastructure: debris-flow mitigation system design
- Resilient community: Bayesian-based resilience quantification, data-driven runout analyses

III. ACADEMIC POSITION

Assistant Professor	University of Alberta, Canada	2020-present
Visiting Researcher	SKLGP, Chengdu University of Technology, China	2015-2019
Graduate Assistant	Georgia Institute of Technology, USA	2011-2019
Undergraduate Assistant	University of Illinois at Urbana-Champaign, USA	2009-2010

IV. TEACHING EXPERIENCE

A. INDIVIDUAL STUDENT GUIDANCE

Ph.D. Student

Prabin Acharya	2022-present
Shima Atashgahi	2022-present
Liming Zheng	2021-present
Kuanyao Zhao (co-supervisor), SKLGP	2015-2020

Masters Student

Min Hou	2022-present
Yibo Tang	2022
Kevin Honsberger	2021
Yixi Zhang (co-supervisor), SKLGP	2015-2019

Undergraduate Student

Javeria Khalid (USRA)	2022
Bronwyn Neufeld (USRA)	2022
Kelly Shin (USRA)	2022

B. COURSES

Instructor, CEE, Soil Mechanics, UAlberta	Win 2021-2022
Instructor, CEE, Solid Mechanics, UAlberta	Fall 2020-2022
Teaching Assistant, CS, Machine Learning, Georgia Tech	Fall 2019
Co-Instructor, CEE, Intl. Disaster Recon., Georgia Tech	Spr 2019
Instructor, CEE, Intro to Geotechnical Eng., Georgia Tech	Sum 2018
Teaching Assistant, CEE, Intl. Disaster Recon., Georgia Tech	Sum 2016, Spr 2018
Teaching Assistant, CEE, Intro to Geotechnical Eng., Georgia Tech	Spr 2013, Fall 2017

V. PUBLICATIONS

A. JOURNAL ARTICLE

1. <u>Liu F</u>, Xu Q, Zhang Y, & Macedo J. Influence of fines content on the undrained flow instability of loess. *Géotechnique Letters* (in review)
2. Wei T, Chen G, Wu L, & <u>Liu F</u> (2022). Rapid reduction in the shear resistance and permeability of the weak layer in the evolution of water-rock weathering. *Engineering Geology*, 299, 106545.
3. Xu Q, Zhao K, <u>Liu F</u>, Peng D, Chen W (2021). Effects of land use on groundwater recharge of a loess terrace under long-term irrigation. *Science of The Total Environment*, 751, 142340.
4. Zhao K, Xu Q, <u>Liu F</u>, Xiu D, Ren X (2020) Field monitoring of preferential infiltration in loess using time-lapsed electrical resistivity tomography. *Journal of Hydrology*, 591, 125278.
5. Xu Q, Li H, He Y, <u>Liu F</u>, Peng D (2019) Comparison of data-driven models of loess landslide runout distance estimation. *Bulletin of Engineering Geology and the Environment*, 78(2), 1281-1294.
6. Li S, Xu Q, Tang M, Iqbal J, Liu J, Zhu X, <u>Liu F</u>, Zhu D (2019) Characterizing the spatial distribution and fundamental controls of landslides in the Three Gorges reservoir area, China. *Bulletin of Engineering Geology and the Environment*, 78(6), 4275-4290.
7. <u>Liu F</u>, Xu Q, Zhang Y, Frost JD, Zhang X (2019) State-dependent flow instability of a silty loess. *Géotechnique Letters*, 9(1), 22-27.
8. Qi X, Xu Q, <u>Liu F</u> (2018) Analysis of the retrogressive loess flowslides in Heifangtai terrace, China. *Engineering Geology*, 236, 119-128.
9. Peng D, Xu Q, <u>Liu F</u>, Zhang S, He Y, Qi X, Zhao K, Zhang X (2018) Distribution and failure modes of the landslides in Heitai terrace, China. *Engineering Geology*, 236, 97-110.
10. Zhu X, Xu Q, Tang M, Li H, <u>Liu F</u> (2018) A hybrid machine learning and computing model for forecasting displacement of multifactor-induced landslides. *Neural Computing and Applications*, 30(12), 3825-3835.
11. <u>Liu F</u>, Xu Q, Yu B, Dong X, Frost JD, Li H (2017) Design and performance of a novel multi-function debris flow mitigation system in Wenjia gully, Sichuan. *Landslides*, 14(6), 2089-2104.
12. Xu Q, Peng D, Li W, Tang M, Hu W, <u>Liu F</u> (2017) The catastrophic landfill flowslide at Hongao dumpsite on December 20, 2015 in Shenzhen, China. *Natural Hazards and Earth System Sciences*, 17(2), 277.
13. Deng Q, Fu M, Ren X, <u>Liu F</u>, Tang H (2017) Precedent long-term gravitational deformation of large-scale landslides in the Three Gorges reservoir area, China. *Engineering Geology*, 221, 170-183.
14. Liu M, <u>Liu F</u>, Huang R, Pei X (2016) Deep-seated large-scale toppling failure in metamorphic rocks: A case study of the Erguxi slope in southwest China. *Journal of Mountain Science*, 13(12), 2094-2110.
15. Zheng D, <u>Liu F</u>, Ju N, Frost JD, Huang R (2016) Cyclic load testing of pre-stressed rock anchors for slope stabilization. *Journal of Mountain Science*, 13 (1), 126-136.
16. Zheng D, Frost JD, Huang R, <u>Liu F</u> (2015) Failure process and modes of rockfall induced by underground mining: A case study of Kaiyang phosphorite mine rockfalls. *Engineering Geology*, 197, 145-157.

B. BOOK

1. Co-Editor, Proceedings of International Symposium on "Geomechanics from Micro to Macro in Research and Practices" (IS Atlanta), Atlanta, 2018, CRC Press
2. Co-Editor, Book of Abstracts, International Symposia on "Geomechanics from Micro to Macro in Research and Practice" (IS Atlanta) and "Bio-mediated and Bio-inspired Geotechnics" (B2G Atlanta), Georgia Tech Press, Atlanta, 189 pp.

C. CONFERENCE PROCEEDING

1. Zheng L, Jin L, & <u>Liu F</u> (2022). NorSand modelling for evaluating the triggering of flowslides in loess. (GeoCalgary 2022).
2. Jin L, Zheng L, Fuggle A, & <u>Liu F</u> (2022). Back-analyzing the triggering of a retrogressive loess flowslide. (Geohazards 8).
3. Wooten RL, Anderson JB, Inci G, Jafari NH, Kuhne J, Montoya BM, Ravichandran N, Stark TD, Ahsanuzzama M, Do J, Jackson D, Jadid R, <u>Liu F</u>, Vo L (2020) Geotechnical Effects of 2018 Hurricane Florence. (Geo-Extreme 2021).

4. <u>Liu F</u>, Frost JD, Macedo J, Xu Q (2020) Effects of structure on the mechanical behavior of loess: implications for flowslide in cemented soils. *Proceedings of the 73rd Canadian Geotechnical Conference* (GeoVirtual 2020).
5. <u>Liu F</u>, Frost JD, Xu Q, Huang RQ (2019) Debris flows and mitigation systems after the 2008 Wenchuan earthquake. *Proceedings of the 7th International Conference on Debris-Flow Hazards Mitigation* (DFHM7).
6. <u>Liu F</u>, Frost JD, Zhang Y, Xu Q (2018) Effects of silt content on the undrained behaviors of saturated loess. *Proceedings of International Symposium on Geomechanics from Micro to Macro in Research and Practice* (IS-Atlanta 2018) (in press).
7. Frost JD, <u>Liu F</u> (2018) Infrastructure failure: addressing resilience and sustainability during reconstruction (Abstract only). *Proceedings of the 5th International Symposium on Mega Earthquake Induced Geo-disasters and Long-Term Effects* (MEGE 2018).
8. Frost JD, <u>Liu F</u> (2018) The role of remote sensing in enhancing geotechnical analysis. *Proceedings of Geotechnical Earthquake Engineering and Soil Dynamics IV* (GEESD 2018).
9. <u>Liu F</u>, Atalay F, Frost JD, Li Y, Huang RQ (2017) Long-term gravitational deformation and reactivation of a gigantic paleolandslide. *Proceedings of the 3rd North American Symposium on Landslides* (NASL 2017).
10. Pei X, Zhang S, Huang RQ, Wei K, <u>Liu F</u>, Duan Y (2016) Deformation propagation and identification of an impending disaster of a retained high embankment based on monitoring of minor deformation. *Proceeding of the 12th International Symposium on Landslides* (ISL 2016).
11. Zheng D, Xiao R, Li W, <u>Liu F</u> (2016) Landslide induced by colluvial loading of rockfall due to underground mining. *Proceeding of the 12th International Symposium on Landslides* (ISL 2016).

D. PATENT

1. Water reservoir system for centrifuge modeling (C.N. # Z.L. 2018 2 0627956.8)   2018

E. REPORT

1. Wooten RL, Anderson JB, Inci G, Jafari NH, Kuhne J, Montoya BM, Ravichandran N, Stark TD, Ahsanuzzama M, Do J, Jackson D, Jadid R, <u>Liu F</u>, Vo L (2019) Geotechnical Effects of Hurricane Florence, GEER Report-063 (doi:10.18118/G6SM19)

F. INVITED PRESENTATION

1.	Invited Lecture, Institute of Oceanology, CAS, Qingdao, China	07/2021
2.	Invited Lecture, Ocean University of China, Qingdao, China	07/2021
3.	Invited Lecture, China University of Mining and Technology, Xuzhou, China	07/2021
4.	Invited Lecture, China University of Geoscience, Wuhan, China	06/2021
5.	Invited Lecture, Nanchang Institute of Technology, Nanchang, China	06/2021
6.	Invited Lecture, East China University of Technology, Nanchang, China	06/2021
7.	Invited Lecture, East China Jiaotong University, Nanchang, China	06/2021
8.	Invited Lecture, Tongji University, Shanghai, China	05/2021
9.	Invited Lecture, Zhejiang University, Hangzhou, China	05/2021
10.	Invited Lecture, Huazhong University of Science and Technology, Wuhan, China (*online*)	12/2020
11.	Invited Lecture, Rowan University, Glassboro, NJ, USA (*online*)	11/2020
12.	Invited Lecture, Shanghai University, Shanghai, China (*online*)	09/2020
13.	Invited Presentation, the 73rd Canadian Geotechnical Conference (GeoVirtual 2020)	09/2020
14.	Invited Lecture, University of Alberta, Edmonton, AB, Canada	07/2019
15.	Invited Presentation, the 7th International Conference on Debris-Flow Hazards Mitigation (DFHM7), Golden, CO, USA	06/2019
16.	Invited Lecture, SKLGP, Chengdu University of Technology, Chengdu, Sichuan, China	03/2019
17.	Invited Lecture, University of Illinois at Urbana-Champaign, Urbana, IL, USA	02/2019
18.	Invited Lecture, Symposium on Geomechanics from Micro to Macro in Research and Practice (IS-Atlanta 2018), Atlanta, GA, USA	09/2018
19.	Invited Presentation, The 3rd North American Symposium on Landslides (NASL 2017), Roanoke, VA, USA	06/2017

G. NEWS ARTICLE

1. "Loess, water, and landslides - the story of a depleting terrace", ScienceTrends   2017

VI.   GRANTS

- UW RAPID Hazard Recon Workshop Travel Grant, NHERI, NSF   2018
- UC Davis Centrifuge Workshop Travel Grant, NHERI, NSF   2018
- P.I., State Key Laboratory Research Fund ($15,000), SKLGP   2017

VII.   CERTIFICATES AND AWARDS

- George F. Sowers Distinguished Graduate Student Award, Georgia Tech   2020
- Advanced Teaching Certificate, Georgia Tech   2019
- CIRTL Associate Teaching Certificate, CIRTL Network Commons   2019
- CEE Future Faculty Fellowship, Georgia Tech   2018
- ASCE Graduate Student Poster Award, Geo-Institute, Georgia Chapter, ASCE   2017
- LARAM Landslide School, UNISA, European Commission   2013

VIII.   SERVICE

- Recorder, GEER Association   2018-2019
- CEE Graduate Student Ambassador, Georgia Tech   2018-2019
- CEE Graduate Student Advisory Council, Georgia Tech   2018-2019
- President, The Geotechnical Society, Georgia Tech   2015
- Vice President, The Geotechnical Society, Georgia Tech   2014

IX.   PROFESSIONAL EXPERIENCE

- Geophysics Consultant, CGPR/VDOT Subsurface Anomaly Detection Research   12/2017
- Research Scientist, CAS-NASA Joint Research on Snow and Glacier Change and Related Natural Disasters in High Mountain Asia   07/2015-04/2016
- Geophysics Consultant, Plains All American, Pipeline Site Subsurface Profiling   09/2015
- Geophysics Consultant, Xu'Da Railway, Tunnel Face Anomaly Forecasting   08/2015
- Geophysics Consultant, Gala Event Facility, Subsurface Profiling   09/2014
- Logistic Data Analyst, Georgia Center of Innovation for Logistics, Department of Economic Development, State of Georgia   08/2013-09/2014

X.   PROFESSIONAL AFFILIATIONS

- American Geophysical Union, Member
- American Society of Civil Engineers (Geo-Institute), Affiliated Member
- American Society of Engineering Education, Member
- Canadian Geotechnical Society, Member
- Geotechnical Society of Edmonton, Member
- Earthquake Engineering Research Institute, Member
- Geotechnical Extreme Events Reconnaissance (GEER) Association, Member
- International Association for Engineering Geology and the Environment, Member
- International Permafrost Association, Member
- International Society for Soil Mechanics and Geotechnical Engineering, Member
- Sigma Xi, Associate Member