

SRIKANTH S. C. MADABHUSHI



CONTACT

email mscs@colorado.edu
phone +1-303-735-0262
ORCID [0000-0003-0166-5015](https://orcid.org/0000-0003-0166-5015)
websites www.colorado.edu/ceae/srikanth-s-c-madabhushi

EMPLOYMENT OVERVIEW

2020-Present University of Colorado, Boulder, United States of America

*Assistant
Professor*

Tenure Track Assistant Professor, Geotechnical Engineering & Geomechanics · Department of Civil, Environmental & Architectural Engineering, College of Engineering and Applied Science

2018-2020 University of California, Davis, United States of America

SRA · Electrical Power and Research Institute · Civil and Environmental Engineering
Topic: Geotechnical Centrifuge Tests to Assess Stability of Slurry-Deposited Coal Fly Ash Description: Centrifuge modeling of coal ash flows, as witnessed in Kingston 2008 or Aberfan 1966. Novel mechanical design for container and sensor development for tests yielded unique results that allow for better risk quantification and management protocols in the future through increased fundamental understanding of the deformation mechanics Supervisors: Prof. Alejandro MARTINEZ · Dr Daniel WILSON · Prof. Bruce KUTTER · Prof. ROSS BOULANGER

*Post Doctoral
Research Associate*

EDUCATION

2014-2018 University of Cambridge, United Kingdom

*Doctorate of
Philosophy*

PhD · EPSRC Doctoral Training Award · Department of Engineering
Thesis: *Multi-Hazard Modelling of Dual Row Retaining Walls*
Description: Combined centrifuge and numerical modelling of a proposed coastal defence under seismic and subsequent Tsunami loading. Led to several fundamental findings about dynamic soil pressures and practical insights about optimal material use to facilitate environmental and economic savings.
Supervisor: Dr Stuart K. HAIGH

2010-2014 University of Cambridge, United Kingdom

*Masters of
Engineering*

MEng MA (Cantab) · Distinction with Honours · Department of Engineering
Specialisation: Civil, Structural and Environmental Engineering
Masters Thesis: *Investigating the Deformation Mechanism under Shallow Foundations*
Description: Combined small scale tests and analytical models to make novel predictions of the transition of deformation mechanisms beneath shallow foundations. This allows improved settlement predictions for design with a more rigorous basis than had been conventionally used in Civil Engineering practice.
Supervisor: Dr Stuart K. HAIGH

SELECT PRIZES AND AWARDS

2022 · Natural Hazards Engineering Research Infrastructure (NHERI) Summit Travel Award · Purdue University

2020 · Johns Hopkins Healthcare Design Competition, Advanced Health Finalist · Johns Hopkins University

2019 · Natural Hazards Engineering Research Infrastructure (NHERI) Summer Institute Travel Award · University of Texas, San Antonio

2018 · International conference of press-in engineering best presentation award · International Press-in Association

2017 · IGS-Shamsher Prakash Biennial Award for best paper on Soil Dynamics in Indian Geotechnical Journal · Indian Geotechnical Society

2017 · Philip Turner Prize - Outstanding work in Geotechnical Centrifuge Testing conducted at the Schofield Centre · Schofield Centre

2014-2017 · Doctoral Training Award and additional Graduate Research Scholarship awarded based on undergraduate examination performance · EPSRC & Trinity College Cambridge

2015 · National Best Dissertation Award for Masters Thesis · British Geotechnical Association

2014 · Performance prize for achieving a rank of 1st in Civil Engineering and 4th in the year overall · Trinity College Cambridge

2014 · Roscoe Prize for best performance in Geotechnical Engineering Modules · Department of Engineering, University of Cambridge

2013 · Society of Construction Law Prize for module performance · Department of Engineering, University of Cambridge

PROFESSIONAL ACTIVITIES AT THE UNIVERSITY OF COLORADO BOULDER

Teaching F20, F21, F22	CVEN 3718 · Geotechnical Engineering II Course for Juniors and Seniors. Developed lecture and laboratory materials to allow synchronous and asynchronous hybrid delivery. Adapted course structure to reflect previous years teaching assessment feedback, increasing the emphasis on student communication skills, ethical responsibilities within Civil Engineering with regards to sustainability and resilience, and modern sensing technologies
S21, S22	CVEN 4728 / 5728 · Foundation Engineering Course for Seniors and Graduate Students. Created lecture and laboratory materials to allow synchronous and asynchronous hybrid delivery. Developed course materials to contextualize industry standards with current research opportunities, in particular deriving plasticity solutions that underly design codes and the use of centrifuge data to validate analytical and design approaches, including overviews of the unique experimental testing facilities at the University of Colorado, Boulder
Service	CIEST Co-Director (July 2022) Appointed co-director for the Center for Infrastructure, Energy and Space Testing (CIEST) laboratory. Leading and managing the new Servo-hydraulic shaker design, testing and commissioning for the 400 g-ton Geotechnical Centrifuge
F20, S20 F21, S21 F22	Graduate Recruiting and Admissions Committee Serving on the Graduate Recruiting and Admissions for Civil, Environmental and Architectural Engineering. Responsible for coordinating admission decisions for the Geotechnical Engineering & Geomechanics graduate program. Additionally contributed towards the ongoing Graduate School Diversity Recruitment Initiatives
Professional/Technical Committees	American Society of Civil Engineers (Aff. M.ASCE), Earth Retaining Structures Technical Committee, Earthquake Engineering and Soil Dynamics Technical Committee
Invited Journal and Conference Reviews	Geotechnique (× 3), Journal of Engineering Mechanics (× 2), Canadian Geotechnical Journal (× 3), Journal of Geotechnical and Geoenvironmental Engineering (× 1), Acta Geotechnica (× 2), Earthquake Engineering and Structural Dynamics (× 1), Geotechnical Engineering (× 1), Soil Dynamics and Earthquake Engineering (× 6), Bulletin of Earthquake Engineering (× 4), International Journal of Physical Modelling in Geotechnics (× 2), Geomechanics and Engineering (× 1), Geotechnical Testing Journal (× 3), International Conference of Physical Modeling in Geotechnics 2022 (× 2), Scientific Reports (× 1), Geohazards (× 1)

INVITED LECTURES / PRESENTATIONS

July 2022 · The Liquefaction Resilience of Dual Row Retaining Walls in the context of the 2011 Tōhoku Earthquake and Tsunami *ICONHIC 2022: Special Session on Liquefaction Forensics*

March 2021 · The Effectiveness of Dewatering to Improve Fly Ash Impoundment Stability *University of California Davis Graduate Geotechnical Student Society (GGSS) Seminar Series*

STUDENT / RESEARCH ADVISING

University of
Colorado Boulder

Qinlin Yu · Primary Advisor · University of Colorado Boulder; PhD Fall 2022 - Present · *Limitations of using Cyclic Consolidated Undrained Triaxial tests for calibrating Constitutive Models for Liquefaction*

Joelle Westcott · Primary Advisor · University of Colorado Boulder; MS (BAM) Summer 2021 - Present · *A Numerical and Centrifuge Investigation into Dynamic Vertical Effective Stresses induced by Horizontal Shaking*

Mengchen Wang · Primary Advisor · University of Colorado Boulder; MS Fall 2022 - Present · *Investigating the potential of the Material Point Method to model material run-out and static liquefaction*
Braden Curry · Primary Advisor · University of Colorado Boulder; MS (BAM) Fall 2022 - Present · *Practical and theoretical challenges of Wave Modeling in Geotechnical experiments for Coastal Engineering*
Christian Dunlap · Primary Advisor · University of Colorado Boulder; Undergraduate Research Project Fall 2022 - Present · *Upgrading the automatic CU Boulder spot pluviator to provide continuous density measurements*
Nicolas Cipoletti, Aaron Hoekstra, Lili Jin · Faculty Advisor · University of Colorado Boulder; MS (BAM) Coursework Students

External Institutes

Kamyar Sadeghi · Research Project Advisor · Spring 2021 - Present · *A fundamental study into earthquake induced dynamic earth pressures on soil retaining systems*
Jaroslav Hruby · Research Project Co-Advisor · Brno University of Technology; Spring 2022 - Fall 2022 · *Investigating the influence of payload stiffness on iterative learning control strategies*

THESIS DEFENSE & EXAM COMMITTEES

University of Colorado Boulder

PhD Thesis Defense: Yuxuan Wen (2022), Yu-wei Hwang (2021)
PhD Comprehensive Exam: PhD Thesis Defense: Yuxuan Wen (2022), Yu-wei Hwang (2020)
MS Comprehensive Exam: Supreeth Prasad (2022), Jacob Klingaman (2022), Akshith Joginpally (2022)

PEER REVIEWED PUBLICATIONS

Book Chapter

[1] **Madabhushi, S. S. C.**, Dobrisan, A., Beber, R., Haigh, S. K., & Madabhushi, S. P. G. (2020). LEAP-UCD-2017 centrifuge tests at Cambridge. In *Model Tests and Numerical Simulations of Liquefaction and Lateral Spreading* (pp. 239-253). Springer. DOI: [10.1007/978-3-030-22818-7_12](https://doi.org/10.1007/978-3-030-22818-7_12)

Journals

[12] **Madabhushi, S. S. C.** & Haigh, S. K. (2022). An Experimental Investigation of the Liquefaction Resilience of Dual Row Retaining Walls Using Centrifuge Modeling. *Journal of Geotechnical and Geoenvironmental Engineering*, 148(11). DOI: [10.1061/\(asce\)gt.1943-5606.0002912](https://doi.org/10.1061/(asce)gt.1943-5606.0002912)

[11] **Madabhushi, S. S. C.**, Martinez, A., Wilson, D. W., & Kutter, B. L. (2022). Design and Instrumentation of a Novel Centrifuge Container for Fly Ash Run-out Experiments. *International Journal of Physical Modelling in Geotechnics*, 1-32. DOI: [10.1680/jphmg.21.00044](https://doi.org/10.1680/jphmg.21.00044)

[10] **Madabhushi, S. S. C.** & Haigh, S. K. (2022). On the dynamic response of flexible dual-row retaining walls in dry sand. *Géotechnique*, 72(11), 941-956. DOI: [10.1680/jgeot.19.P.189](https://doi.org/10.1680/jgeot.19.P.189)

[9] Bharath, A., & **Madabhushi, S. S. C.** (2021). An Absorbing Improvement for Space Infection Decompression: A Novel Drainage Device. *Medical Devices* DOI: [10.2147/MDER.S320723](https://doi.org/10.2147/MDER.S320723)

[8] **Madabhushi, S. S. C.** & Haigh, S. K. (2021). Dual row retaining walls in dry sand: influence of wall stiffness on seismic response. *Canadian Geotechnical Journal*, 58(10), 1558-1570. DOI: [10.1139/cgj-2020-0538](https://doi.org/10.1139/cgj-2020-0538)

[7] **Madabhushi, S. S. C.** & Haigh, S. K. (2019). Centrifuge testing of dual row retaining walls in dry sand: The influence of earthquake sequence and multiple flights. *Soil Dynamics and Earthquake Engineering*, 125. DOI: [10.1016/j.soildyn.2019.05.029](https://doi.org/10.1016/j.soildyn.2019.05.029)

(Invited Paper)

[6] **Madabhushi, S. S. C.** & Haigh, S. K. (2019). Using tactile pressure sensors to measure dynamic earth pressures around dual-row walls. *International Journal of Physical Modelling in Geotechnics*, 19(2), 58-71. DOI: [10.1680/jphmg.17.00053](https://doi.org/10.1680/jphmg.17.00053)

[5] **Madabhushi, S. S. C.**, Haigh, S. K., & Madabhushi, S. P. G. (2018). LEAP-GWU-2015: Centrifuge and numerical modelling of slope liquefaction at the University of Cambridge. *Soil Dynamics and Earthquake Engineering*, 113, 671-681. DOI: [10.1016/j.soildyn.2016.11.009](https://doi.org/10.1016/j.soildyn.2016.11.009)

(Shamsher Prakash Biennial Award)

[4] **Madabhushi, S. S. C.** & Madabhushi, S. P. G. (2015). Finite element analysis of floatation of rectangular tunnels following earthquake induced liquefaction. *Indian Geotechnical Journal*, 45(3), 233-242. DOI: [10.1007/s40098-014-0133-3](https://doi.org/10.1007/s40098-014-0133-3)

[3] Kutter, B. L., Carey, T. J., Hashimoto, T., Zeghal, M., Abdoun, T. Kokkali, P., Madabhushi, S. P. G., Haigh, S. K., Burali d'Arezzo, F., **Madabhushi, S. S. C.**, Hung, W. Y., Lee, C. J., Cheng, H. C., Iai, S., Tobita, T., Ashino, T., Ren, J., Zhou, Y. G., Chen, Y. M., Sun, Z. B. & Manzari, M. T. (2018). LEAP-GWU-2015 experiment specifications, results, and comparisons. *Soil Dynamics and Earthquake Engineering*, 113, 616-628. DOI: [10.1016/j.soildyn.2017.05.018](https://doi.org/10.1016/j.soildyn.2017.05.018)

[2] **Madabhushi, S. S. C.**, Elshafie, M. Z. E. B., & Haigh, S. K. (2015). Accuracy of distributed optical fiber temperature sensing for use in leak detection of subsea pipelines. *Journal of Pipeline Systems Engineering and Practice*, 6(2). DOI: [10.1061/\(ASCE\)PS.1949-1204.0000189](https://doi.org/10.1061/(ASCE)PS.1949-1204.0000189)

[1] **Madabhushi, S. S. C.**, & Haigh, S. K. (2015). Investigating the changing deformation mechanism beneath shallow foundations. *Géotechnique*, 65(8), 684-693. DOI: [10.1680/geot.14.P.226](https://doi.org/10.1680/geot.14.P.226)

International Conferences

[16] Westcott, J., **Madabhushi, S. S. C.**, Wham, B. P., Ihnotic, C., Dashti, S., Weller, D., Hruby, J. & Brito, L. (2022). Development of a new servo-hydraulic earthquake actuator for the 400 g-ton Centrifuge at the University of Colorado Boulder. *10th International Conference on Physical Modelling in Geotechnics*, Daejeon, S. Korea

[15] **Madabhushi, S. S. C.**, Martinez, A. V., & Wilson, D. W. (2022). Investigating the combined use of Depth Sensing Cameras and Optical Flow Analyses during Centrifuge Modelling of Fly Ash Run-out. *10th International Conference on Physical Modelling in Geotechnics*, Daejeon, S. Korea

[14] Bessette, C., Brito, L., Dashti, S. Wham, B., W., Kamai, R., Liel, A., Westcott, J. & **Madabhushi, S. S. C.**. (2022). Duct Seal Design Considerations in a Rigid Container for Dynamic Centrifuge Modeling of Liquefiable Deposits. *10th International Conference on Physical Modelling in Geotechnics*, Daejeon, S. Korea

[13] **Madabhushi, S. S. C.**, Follett, S. B., Martinez, A. V., Wilson, D. W., & Gallagher, B. (2022) Investigating the use of Centrifuge Modeling and miniature CPTs to Characterize the Run-Out Behavior of Fly Ash. *Geo-Congress 2022*, Charlotte, N. C., USA DOI:[10.1061/9780784484050.051](https://doi.org/10.1061/9780784484050.051)

[12] Follett, S. B., **Madabhushi, S. S. C.**, Martinez, A. V., Wilson, D. W. & Gallagher, B. (2021). A centrifuge investigation on the effect of density and water content on the runout behavior of coal fly ash impoundments. *Tailings and Mine Waste 2021*, Banff, Canada

[11] **Madabhushi, S. S. C.**, O'Hara, K., Martinez, A. V., Wilson, D. W., Boulanger, R. W., Kutter, B. L. & Ladwig, K. (2020). Centrifuge Modeling of Fly Ash Deposit Dewatering. *Geo-Congress 2020* Minneapolis, MN., USA DOI:[10.1061/9780784482797.003](https://doi.org/10.1061/9780784482797.003)

[10] Goswami, N., Zeghal, M., Kutter, B.L., Manzari, M.T., Abdoun, T., Carey, T., Chen, Y.-M., Escoffier, S., Haigh, S.K., Hung, W.-Y., Kim, D.-S., Kim, S.-N., Korre, E., Liao, T.-W., Liu, K., Madabhushi, G.S.P., **Madabhushi, S.S.C.**, Okamura, M., Sjafruddin, A.N., Tobita, T., Ueda, K., Vargas, R. & Zhou, Y.-G. (2020). Difference and sensitivity analyses of the LEAP-2017 Experiments. In *Model Tests and Numerical Simulations of Liquefaction and Lateral Spreading* (pp. 131-156). Springer, Cham.

[9] Kutter, B.L., Carey, T.J., Stone, N., Zheng, B.L., Gavras, A., Manzari, M.T., Zeghal, M., Abdoun, T., Korre, E., Escoffier, S., Haigh, S.K., Madabhushi, G.S.P., **Madabhushi, S.S.C.**, Hung, W.-Y., Liao, T.-W., Kim, D.-S., Kim, S.-N., Ha, J.-G., Kim, N.R., Okamura, M., Sjafruddin, A.N., Tobita, T., Ueda, K., Vargas, R., Zhou, Y.-G. & Liu, K. (2020). LEAP-UCD-2017 comparison of centrifuge test results. *Model tests and numerical simulations of liquefaction and lateral spreading*. Springer, Cham.

[8] **Madabhushi, S. S. C.** & Haigh, S. K. (2018). Measuring the behaviour of dual row retaining walls in dry sands using centrifuge tests. *International Conference of Physical Modelling in Geotechnics*, London, United Kingdom

(Best presentation award)

[7] **Madabhushi, S. S. C.** & Haigh, S. K. (2018). A Comparison between the Dynamic Behaviour of Flexible Dual Row Walls Founded in Dry and Liquefiable Sands. *1st International Conference on Press-in Engineering*, International press-in association, Kochi, Japan

[6] Beber, R., **Madabhushi, S. S. C.**, Dobrisan, A., Haigh, S. K., & Madabhushi, S. P. G. (2018). LEAP GWU 2017: Investigating different methods for verifying the relative density of a centrifuge model. *International Conference of Physical Modelling in Geotechnics*, London, United Kingdom

[5] Kutter, B. L., Carey, T. J., Zheng, B. L., Gavras, A., Stone, N., Zeghal, M., Abdoun, T., Korre, E., Manzari, M., Haigh, S. K., **Madabhushi, S. S. C.**, Madabhushi, S. P. G., Okamura, M., Sjafruddin, A.N.N., Escoffier, S., Kim, D-S., Kim, S-N, Ha, J.-G., Tobita, T., Hikaru, K. L., Yatsugi, H., Ueda, K., Vargas, R.R., Hung, W-Y., Liao, T-W, Zhou, Y-G, & Liu. K. (2018). Twenty-Four Centrifuge Tests to Quantify Sensitivity of Lateral Spreading to Dr and PGA. *5th Geotechnical Earthquake Engineering and Soil Dynamics Conference*, Austin, TX, USA

[4] **Madabhushi, S. S. C. & Haigh, S. K.** (2018). Combining Experimental and Numerical Methods to investigate the seismic performance of dual row retaining walls in Dry Sand. *16th European Conference on Earthquake Engineering*, Thessaloniki, Greece

(Invited to Extend
Paper)

[3] **Madabhushi, S. S. C. & Haigh, S. K.** (2016). Using tactile pressure sensors to measure dynamic earth pressures in centrifuge models of dual row retaining walls. *Proceedings of the 3rd European Conference on Physical Modelling in Geotechnics (EUROFUGE)*, Nantes, France

[2] **Madabhushi, S. S. C & Haigh, S. K.** (2016). The Influence of Embedment on the Seismic Performance of Dual Row Retaining Walls. *6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, New Delhi, India. Missouri University of Science and Technology

[1] **Madabhushi, S. S. C. & Haigh, S. K.** (2014). Visualising the Deformation Mechanisms beneath Shallow Foundations. In *Proceedings of Indian Geotechnical Conference*, Kakinada, India