



Sinha Sumeet K

One Shields Avenue, UC Davis – California – USA

☎ (530)-601-8271 • ✉ sumeet.kumar507@gmail.com

🌐 www.sumeetksinha.com • **in** [SumeetKSinha](#) • [SumeetSinha](#)

Education

University Of California Davis (GPA - 4.0/4.0) <i>PhD, Geotechnical Engineering</i>	California, USA 2018–
University Of California Davis (GPA - 4.0/4.0) <i>Masters, Geotechnical Engineering</i>	California, USA 2015–2017
Indian Institute of Technology Delhi <i>Research Assistant, Civil Engineering</i>	Delhi, India 2014–2015
Indian Institute of Technology Delhi (GPA - 4.0/4.0) <i>B. Tech, Civil Engineering with minor in Computer Science Engineering</i>	Delhi, India 2010–2014

Research Experience

PhD Thesis <i>Advisors : Prof Katerina Ziotopoulou & Prof Bruce Kutter</i> <i>Validation of Design for design of Liquefaction-Induced Downdrag on Piles:</i> Centrifuge model tests would be performed to investigate and understand the different mechanisms affecting negative skin friction during liquefaction around piles and evaluate the downdrag loads and ground settlements. The knowledge gained would then be used to revise the existing procedures for better and cost-effectively design and would also serve as a validation for existing and new empirical, numerical and analytical models.	UC Davis 2018–Present
Master Thesis <i>Advisor : Prof Boris Jeremić</i> <i>Nonlinear Effects in Soil Structure Interaction:</i> Developed new non-linear normal contact and shear interface elements to correctly model the soil-structure interface for dry as well as fully/partially-saturated soil conditions. Developed preprocessor <i>gmESSI</i> and post-processor <i>pvESSI</i> and integrated with Real-ESSI Simulator to make it a complete Finite Element simulation system. Extended the code for parallel computation and optimized output for running large simulations.	UC Davis 2015–2017
Research Assistant <i>Advisor : Prof G V Ramana</i> <i>Stochastic 1-D Seismic Ground Response Analysis of NCT Delhi :</i> A Stochastic study of 1-D equivalent linear seismic ground response analysis of Delhi, by undertaking the uncertainties associated with the depth of bed rock varying from 50-300 m was performed, to find its effect on amplification factor (AF) and response spectrum (RS). Finally, a response spectrum for Delhi was proposed based on the depth of bed rock which could be used to produce a safer and economic design for future building constructions.	IIT Delhi 2014–2015
B. Tech Thesis <i>Advisor : Prof Bappaditya Manna</i> <i>Nonlinear Dynamic Response of Floating Piles under Machine Induced Vibration:</i> Developed programs for studying the frequency-amplitude response of single pile subjected to dynamic vertical, coupled and torsional loads using Finite Element Approach (FEM). The program modeled the stiffness and damping parameters of linear and nonlinear soil models using Continuum Approach.	IIT Delhi 2010–2014

Teaching Experience

Spr'18 **ECI 171L, Soil's Lab**: organized 30 mins lectures and labs for 15 students, UC Davis
Wnt'18 **ECI 171L, Soil's Lab**: organized 30 mins lectures and labs for 15 students, UC Davis
Fall'17 **ENG 35, Statics**: substituted lectures and held office hours for 40 students, UC Davis
Fall'16 **ENG 104, Mechanics of Materials**: substituted lectures and held office hours, UC Davis
Spr'14 **CVL 222, Soil Mechanics**: conducted soil mechanics tutorials for 120 students, IIT Delhi
Fall'13 **CVL 242, Structural Analysis I**: assisted in structural lab experiments, IIT Delhi

Honors And Awards

Invited memembr of Phi Kappa Phi Honor Society at UC Davis, (March, 2018), UC Davis
Nominated For Outstanding Graduate Student Teaching Award, (March, 2017), UC Davis
Jawahar Gajri Bai Award (March 2014), IIT Delhi
Ministry Of Human Resource Development MCM Scholarship, 2010-2014, IIT Delhi
Semester Merit Award: awarded to top 7% institute-wise, 2010-2011-2012-2014, IIT Delhi
UG Assistantship Award (2013-2014), IIT Delhi
Hindustan Pratibha Samman (May 2010)

Professional Experience

Vice President : Indian Graduate Student Association, UC Davis (2018-Present)

Seminar Coordinator : Geotechnical Graduate Student Society, UC Davis (2017-Present)
- GGSS was officially selected to host the 2017-2018 Cross USA Lecture in UC Davis.
- Coordinated weekly seminars with speakers from academia and industry.

Technical Officer : Indian Graduate Student Association, UC Davis (2017-Present)
- Designed website with a professional look, one of the best among student group organizations.
- Redesigned IGSA Logo, organized events: Diwali night, Rang de Davis and industry professional conclave.

Website Coordinator : Geotechnical Graduate Student Society, UC Davis (2016-2017)
- Completely transformed the website to give a fresh and a professional look.

Manager : Society For Advancement Of Research In Arts And Science (Dec. 2012 - 2014)
- Let a team of 16 at IIT Delhi and expanded the organization to effect a population of 2000.
- Piloted the Audio Visual Education System (AVES), an ICT solution for quality primary education.
- Started E-Kiosk Information Center, an ICT platform for rural-networking and information.

Internee : Civtech Consultants Pvt. Ltd, Noida, Delhi, India (May 2013 - July 2013)
- Designed a 25+ storey residential structure (DLF Sec-79, Noida) in STAAD/ETABS and performed Visual Basic (VB Macro) modeling to obtain Center of Rigidity of buildings to optimize the steel requirements from the effects of torsion.
- Prepared and delivered presentations on importance of quality checks & safety at construction sites

Internee : Delhi Metro Railway Corporation, New Delhi, India (May 2012 - July 2012)
- Supervised, performed quality checks on concreting, water proofing, piling and construction of diaphragm wall and launching/receiving shaft at Janpath, Delhi.
- Got unique opportunity to work with Tunnel Boring Machines (TBM) and learned about ring erection, segment handling and tunnel design.

- Gave valuable suggestions on integration plan of Metro Stations and visited Batch Mixing Plant and India's largest casting yard in Mundaka.

Publications

Books.....

Boris Jeremić with contributions by Zhaohui Yang, Zhao Cheng, Guanzhou Jie, Nima Tafazzoli, Panagiota Tasiopoulou, Federico Pisanò, José Abell, Kohei Watanabe, Yuan Feng, **Sumeet Kumar Sinha**, Fatemah Behbehani, Han Yang, Maxime Lacour and Hexiang Wang. *Computational Mechanics: Inelastic Finite Elements for Pressure Sensitive Materials*. Available upon request (not for sale). 2302 pages, 2017. ([pdf of overview](#))

Papers in Referred Journals.....

Han Yang, **Sumeet Kumar Sinha**, Yuan Feng, David B McCallen, and Boris Jeremić. *Energy dissipation analysis of elastic-plastic materials*. Computer Methods in Applied Mechanics and Engineering, Volume 331, 2018, Pages 309-326, ISSN 0045-7825.([pdf](#))

Sumeet Kumar Sinha, Sanjit Biswas and Bappaditya Manna. *Nonlinear Characteristics of Floating Piles Under Rotating Machine Induced Vertical Vibration*. Journal of Geotechnical and Geological Engineering, Volume 33, Issue 2, April 2015, Pages 1-18.([pdf](#))

Proceedings of Referred Conferences.....

Han Yang, Yuan Feng, **Sumeet Kumar Sinha**, Hexiang Wang, and Boris Jeremić. *Energy Dissipation in Soil Structure Interaction System*. Abstract Accepted for the 5th Geotechnical Earthquake Engineering and Soil Dynamics (GEESD) Conference, Austin, Texas. June 10-13, 2018. ([abstract](#))

Sumeet Kumar Sinha, Fatemah Behbehani, and Boris Jeremić. *Modelling of buoyant forces in earthquake soil-structure interaction*. In proceedings of 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics, Wuhan, China, 19-23 October 2017.([pdf](#))

Han Yang, **Sumeet Kumar Sinha**, Yuan Feng, and Boris Jeremić. *Evaluation of Energy Dissipation in Elastic-Plastic Solids*. Proceedings of the 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), Wuhan, China. October 19-23, 2017. ([pdf](#))

Sumeet Kumar Sinha, Yuan Feng, Han Yang, Hexiang Wang, and Boris Jeremić. *3-D non-linear modeling and its effects in earthquake soil-structure interaction*. Proceedings of the 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. ([pdf](#))

Hexiang Wang, Han Yang, **Sumeet Kumar Sinha**, Chao Luo, and Boris Jeremić. *3-D Non-Linear Earthquake Soil-Structure Interaction Modeling of Embedded Small Modular Reactor (SMR)*. Proceedings of the 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. ([pdf](#))

Yuan Feng, José Antonio Abell, **Sumeet Kumar Sinha**, Han Yang, Fatemah Behbehani, Hexiang Wang, Nebojša Orbović, David B McCallen, and Boris Jeremić. *Verification for the Real ESSI Simulator*. Proceedings of the 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. ([pdf](#))

J. A. Abell, **Sumeet Kumar Sinha**, Boris Jeremić. *Wavelet Based Synthetic Earthquake Sources for Path and Soil Structure Interaction Modeling: Stress Testing of Nuclear Power Plants*. In proceedings of IAEA conference on: Best Practices in Physics-based Fault Rupture Models for Seismic Hazard

Assessment of Nuclear Installations Vienna, Austria, November 18-20, 2015.(pdf)

Sumeet Kumar Sinha, Sanjit Biswas and Bappaditya Manna. *Nonlinear Damping Response of Floating Piles Under Vertical Vibration*. Proceedings of Computer Methods and Recent Advances in Geomechanics, ISBN 9781138001480, September 2014, Pages 951-956.(pdf)

Reports And Manuals.....

Sumeet Kumar Sinha and Boris Jeremić. *PvESSI – Visualization Plugin for Real-ESSI Simulator System*. University of California Davis,2017. (pdf) .

Sumeet Kumar Sinha and Boris Jeremić. *GmESSI – Gmsh to Real-ESSI Input Translator*. University of California, Davis, 2017. (pdf)

José Abell, **Sumeet Kumar Sinha**, Yuan Feng and Boris Jeremić. *Real ESSI Simulator Executable Build Procedures*. University of California, Davis, 2017.

José Abell, **Sumeet Kumar Sinha**, Yuan Feng and Boris Jeremić. *Real ESSI Simulator Output Formats*. UCD–CompGeoMech–03–2017. (pdf)

José Abell, Yuan Feng, **Sumeet Kumar Sinha**, Fatemah Behbehani and Boris Jeremić. *Real ESSI Simulator Domain Specific Language (DSL)*. UCD–CompGeoMech–02–2017.(pdf)

Sumeet Kumar Sinha. and Yuan Feng. *Preconditioning techniques for large scale iterative linear system solvers*. University of California Davis, June 2016. (pdf)

Sumeet Kumar Sinha. *Soil pile non-linear analysis of vertical vibration*. Technical report, Indian Institute Of Technology Delhi, 2014. (pdf)

Technical Presentations.....

Sumeet Kumar Sinha. *Investigation of liquefaction-induced downdrag on axially loaded piles*. Poster Presentation in UC Davis Geotechnical Graduate Student Society (GGSS) 11th Round Table, Davis, CA. March 1, 2018.

Yuan Feng, Han Yang, **Sumeet Kumar Sinha**, Jenna Wang, Floriana Petrone, Frank McKenna, David McCallen and and Boris Jeremić. *Realistic Modeling and Simulation of Earthquake Soil Structure Interaction*. United Nations, International Atomic Energy Agency, Department of Nuclear Safety and Security, Division of Nuclear Installation, External Events Safety Section, Vienna, Austria, 12 January, 2018. (pdf)

Sumeet Kumar Sinha. *Modeling of Nonlinear Dry and Saturated Soil-Foundation Interface for Soil-Structure Interaction in Real ESSI Simulator System*. Special Seminar at Indian Institute of Technology Delhi, India, 8 January, 2018. (pdf)

Sumeet Kumar Sinha, Fatamah Behbehani, Han Yang, and Boris Jeremić. *Modelling of Buoyant Force in Earthquake Soil Structure Interaction*. The 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), Wuhan, China. October 19-23, 2017. (pdf)

José Antonio Abell, Yuan Feng, **Sumeet Kumar Sinha**, Nebojša Orbović, Davis B McCallen, and Boris Jeremić. *3D vs 1D vs 3x1D Ground Motions and the Earthquake Soil Structure Interaction*. The 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. (pdf)

Yuan Feng, **Sumeet Kumar Sinha**, José Antonio Abell, Han Yang, Fatamah Behbehani, Nebojša Orbović, Davis B McCallen, and Boris Jeremić. *Nonlinear effects in Earthquake Soil Structure Interaction of Nuclear Power Plants*. The 21st Structural Mechanics in Reactor Technology (SMiRT) Conference,

Busan, Korea. August 20-25, 2017. ([pdf](#))

Hexiang Wang, Yuan Feng, Han Yang, **Sumeet Kumar Sinha**, Davis B McCallen, and Boris Jeremić. *Nonlinear Earthquake Soil Structure Interaction Analysis for Small Modular Reactors*. The 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. ([pdf](#))

Yuan Feng, José Antonio Abell, **Sumeet Kumar Sinha**, Han Yang, Fatamah Behbehani, Nebojša Orbović, Davis B McCallen, and Boris Jeremić. *Verification for the Real ESSI Simulator*. The 21st Structural Mechanics in Reactor Technology (SMiRT) Conference, Busan, Korea. August 20-25, 2017. ([pdf](#))

Sumeet Kumar Sinha. *3-D Modeling of Shear Box (one of the largest in US) in Real ESSI Simulator System*. Poster Presentation in UC Davis Geotechnical Graduate Student Society (GGSS) 10th Round Table, Davis, CA. March 10, 2017. ([pdf](#))

Sumeet Kumar Sinha. *New Developments in Real ESSI Simulator System*. Presentation in DOE Project Meeting at University Of California Davis, March, 2017. ([pdf](#))

Sumeet Kumar Sinha. *Contact mechanics in Real ESSI Simulator system*. Presentation in DOE Project Meeting at University Of California Davis, June, 2016. ([pdf](#))

Softwares Applications Contributed/Developed

Real ESSI Simulator System : Boris Jeremić, Guanzhou Jie, Zhao Cheng, Nima Tafazzoli, Panagiota Tasiopoulou, Federico Pisanò José Antonio Abell, Kohei Watanabe, Yuan Feng, **Sumeet Kumar Sinha**, Fatamah Behbehani, Han Yang, and Hexiang Wang. University of California, Davis and Lawrence Berkeley National Laboratory, 2017.

gmESSI : General translator to convert Gmsh (.msh) mesh to Real ESSI Simulator input (.fei) files.

pvESSI : Plugin in ParaView for visualization of Real ESSI Simulator output.

CPT Based Liquefaction Triggering SpreadSheet : MS Excell sheet for identifying liquefiable layers based on *Boulanger and Idriss (JGGE 2015)*.

Beamalyzer : 3-D finite element matlab program to perform analysis of beams.

Relevant Courses

- Advance Soil Mechanics I and II
- Geotechnical Earthq Eng. I and II
- Advance Foundation Design
- Theoretical Geomechanics
- Inelastic Behavior of Solids
- Theory of Elasticity
- Finite Element Procedures
- FEM for Elastic-Plastic Materials
- Dynamic Finite Elements
- Scientific Computation
- Applied Numerical Algebra

Skills

Programming: Matlab, Python, C/C++, LaTeX

Softwares: DeepSoil, Shake91, Ansys, Abaqus, ArcGIS, Staad Pro, Etabs, FEM with 3-D Plasticity