Associate Professor Sanjay Kumar Shukla

Associate Professor



 Biography

Dr Sanjay Kumar Shukla is the Founding Editor-in-Chief of International Journal of Geosynthetics and Ground Engineering (Springer Nature, Switzerland). He holds the Distinguished/Adjunct Professorship in Civil Engineering at VIT University, Vellore, Chitkara University, Himachal Pradesh, VR Siddhartha Engineering College, Vijayawada, India, and Fiji National University, Fiji. He has over 22 years of experience in teaching, research and consultancy in the field of Civil (Geotechnical) Engineering. He collaborates with several world-class universities, research institutions, industries and individuals on academic and field projects. As a Consulting Geotechnical Engineer, he has successfully provided solutions to the challenging field problems faced by many engineering organizations. He has authored/co-authored more than 220 research papers and technical articles, including over 130 refereed journal publications. He is also author/co-author/editor of 11 books, including 7 textbooks, and 12 book chapters. His works have been cited well. Shukla’s generalized expression for seismic active thrust (2015) and Shukla’s generalized expression for seismic passive resistance (2013) are routinely used by practicing engineers worldwide for designing the retaining structures. He has been honored with several awards, including the IGS Award (2018) from the International Geosynthetics Society, USA, in recognition of his outstanding contribution to the development and use of geosynthetics during 2014-2017 award period. He serves on the editorial boards of several international journals. He is a fellow of Engineers Australia, a life fellow of Institution of Engineers (India) and Indian Geotechnical Society, a member of American Society of Civil Engineers (ASCE), International Geosynthetics Society and several other professional bodies.

Research Areas and Interests

* Geosynthetic and Fibres for Sustainable Developments
* Ground Improvement Methods
* Earth Pressure and Slope Stability
* Soil-Structure Interaction
* Environmental, Mining and Pavement Geotechnics

**Qualifications**

* Doctor of Philosophy, India, 1995.
* Master of Technology in Civil Engineering, India, 1992.
* Bachelor of Science Engineering (Civil), India, 1988.

Research

**Recent Research Grants**

* Stability of Slopes in the Presence of Conduits,  The Higher Education Commission,Government of the Islamic Republic of Pakistan,  HEC Scholarship,  2018 - 2022,  $76,000.
* Load-settlement behaviour of geosynthetic-reinforced soil bed under repeated loading,  The Higher Education Commission,Government of the Islamic Republic of Pakistan,  HEC Scholarship,  2018 - 2022,  $152,000.
* Soft ground improvement with prefabricated vertical drains (PVDs) and heat,  Department of Education and Training,  DoE - Endeavour Research Fellowship ,  2016,  $1,500.
* An Investigation of the Load Bearing Capacity of Structural Anchors in Early Age Concrete,  Edith Cowan University,  ECU Early Career Researcher Grant - 2014,  2014 - 2015,  $25,000.
* Modeling of contaminant transport through fractured porous rock mass,  Department of Education and Training,  DoE - Endeavour Research Fellowship ,  2015,  $1,500.
* A Novel Vibration Health Monitoring System for Civil Infrastructures,  Edith Cowan University,  ECU Early Career Researcher - Grant,  2010 - 2011,  $24,000.

Recent Publications (within the last five years)

**Journal Articles**

* Aria, S., **Shukla, S.**, Mohyeddin Kermani, A., (2019), Numerical investigation of wraparound geotextile reinforcement technique for strengthening foundation soil. *International Journal of Geomechanics*, 19(4), 1-15, DOI: 10.1061/(ASCE)GM.1943-5622.0001361.
* Muthukumar, M., **Shukla, S.**, (2019), Influence of fibres on volume change attributes of expansive soil blended with lime. *Proceedings of the Institution of Civil Engineers: Ground Improvement*, 172(1), 37-43, London, DOI: 10.1680/jgrim.17.00075.
* Pandey, L., **Shukla, S.**, (2019), Detection of leachate contamination in Perth landfill base soil using electrical resistivity technique. *International Journal of Geotechnical Engineering*, 13(3), 249-260, United States, J Ross Publishing Inc., DOI: 10.1080/19386362.2017.1339763.
* Bharathi, M., Dubey, R., **Shukla, S.**, (2019), Experimental investigation of vertical and batter pile groups subjected to dynamic loads. *Soil Dynamics and Earthquake Engineering*, 116(1), 107-119, DOI: 10.1016/j.soildyn.2018.10.012.
* Baah-Frempong, E., **Shukla, S.**, (2019), Effectiveness of reinforcing a low-height sandy slope with geosynthetic reinforcement for landscape development. *Arabian Journal of Geosciences*, 12(3), 1-15, DOI: 10.1007/s12517-019-4269-4.
* Teing, TT., Huat, BB., **Shukla, S.**, Vivi, A., Nahazanan, H., (2019), Effects of alkali-activated waste binder in soil stabilization. *International Journal of GEOMATE*, 17(59), 82-89, DOI: 10.21660/2019.59.8161.
* Singh, M., Trivedi, A., **Shukla, S.**, (2019), Strength enhancement of the subgrade soil of unpaved road with geosynthetic reinforcement layers. *Transportation Geotechnics*, 19(1), 54-60, DOI: 10.1016/j.trgeo.2019.01.007.
* Sahoo, P., **Shukla, S.**, (2019), Taylor's slope stability chart for combined effects of horizontal and vertical seismic coefficients. *Geotechnique: international journal of soil mechanics*, 69(4), 344-354, London, ICE Publishing, DOI: 10.1680/jgeot.17.p.222.
* Esmi Jahromi, M., Khiadani, M., **Shukla, S.**, (2019), A comparative study of predicting oxygen transfer in weirs and water jets in cross-flows. *Proceedings of the Institution of Civil Engineers: Water Management*, 172(1), 14-29, London, United Kingdom, Institute of Civil Engineers Publishing, DOI: 10.1680/jwama.16.00046.
* Aria, S., **Shukla, S.**, Mohyeddin Kermani, A., (2019), Tensile behaviour of geotextile reinforcement within the sandy soil supporting a loaded footing. *Geotechnique Letters*, 9(1), 59-65, London, DOI: 10.1680/jgele.18.00169.
* Kou, Y., **Shukla, S.**, (2019), Analytical investigation of load over pipe covered with geosynthetic-reinforced sandy soil. *International Journal of Geosynthetics and Ground Engineering*, 5(1), 1-8, DOI: 10.1007/s40891-019-0156-z.
* Yaghoubi, J., **Shukla, S.**, Mohyeddin Kermani, A., (2018), Effects of addition of waste tyre fibres and cement on the engineering behaviour of Perth sand. *Geomechanics and Geoengineering: an international journal*, 13(1), 42-53, DOI: 10.1080/17486025.2017.1325941.
* Sahoo, P., **Shukla, S.**, Mohyeddin Kermani, A., (2018), Analytical expressions for factor of safety, yield acceleration and displacement of cohesionless soil slope under generalized seismic conditions. *Journal of Mountain Science*, 15(7), 1559–1571, DOI: 10.1007/s11629-017-4780-6.
* Raj, D., Singh, Y., **Shukla, S.**, (2018), Seismic bearing capacity of strip foundation embedded in c-ϕ soil slope. *International Journal of Geomechanics*, 18(7), Article no.04018076, DOI: 10.1061/(ASCE)GM.1943-5622.0001194.
* Borana, L., Yin, J., Singh, D., **Shukla, S.**, Tong, F., (2018), Direct shear testing study of the interface behaviour between steel plate and compacted completely decomposed granite under different vertical stresses and suctions. *Journal of Engineering Mechanics*, 144(1), article no.04017148, DOI: 10.1061/(ASCE)EM.1943-7889.0001352..
* Nghia, N., Lam, L., **Shukla, S.**, (2018), A new approach to solution for partially penetrated prefabricated vertical drains. *International Journal of Geosynthetics and Ground Engineering*, 4(2), article no.11, DOI: 10.1007/s40891-018-0128-8.
* Kou, Y., **Shukla, S.**, Mohyeddin Kermani, A., (2018), Experimental investigation for pressure distribution on flexible conduit covered with sandy soil reinforced with geotextile reinforcement of varying widths. *Tunnelling and Underground Space Technology*, 80(1), 151-163, DOI: 10.1016/j.tust.2018.06.012.
* Muthukumar, M., **Shukla, S.**, (2018), Swelling behaviour of expansive clay beds reinforced with encased granular pile anchors. *International Journal of Geotechnical Engineering*, 12(2), 109-117, United States, Taylor and Francis Ltd., DOI: 10.1080/19386362.2016.1254991.
* Yaghoubi, M., **Shukla, S.**, (2018), A universal gradation for highway pavement base course materials. *International Journal of Geotechnical Engineering*, 12(2), 166-171, United States, J Ross Publishing Inc., DOI: 10.1080/19386362.2016.1258378.
* Kumar, A., Choudhary, R., Narzari, RN., Kataki, R., **Shukla, S.**, (2018), Evaluation of bio-asphalt binders modified with biochar: a pyrolysis by-product of Mesua ferrea seed cover waste. *Cogent Engineering*, 5(1), 1-15, London, DOI: 10.1080/23311916.2018.1548534.
* Baah-Frempong, E., **Shukla, S.**, (2018), Stability analysis and design charts for a sandy soil slope supporting an embedded strip footing. *International Journal of Geo-Engineering*, 9(1), article no.13, DOI: 10.1186/s40703-018-0082-2.
* Pandey, L., **Shukla, S.**, (2018), Effect of state of compaction on the electrical resistivity of sand-bentonite materials. *Journal of Applied Geophysics*, 155(1), 208-216, DOI: 10.1016/j.jappgeo.2018.06.016.
* Thomas, N., Richardson, S., **Shukla, S.**, (2018), A simplified simulation model to estimate the storage length of the right-turn-lane in left-hand traffic at signalised intersections for different signal phases and cycle timings. *The Open Civil Engineering Jounral*, 12(1), 205-224, DOI: 10.2174/1874149501812010205.
* Kranthikumar, A., Sawant, V., Kumar, P., **Shukla, S.**, (2017), Numerical and experimental investigations of granular anchor piles in loose sandy soil subjected to uplift loading. *International Journal of Geomechanics*, 17(2), 1-10, DOI: 10.1061/(ASCE)GM.1943-5622.0000733.
* Borana, L., Yin, J., Singh, D., **Shukla, S.**, (2017), Influence of matric suction and counterface roughness on shearing behaviour of completely decomposed granitic soil and steel interface. *Indian Geotechnical Journal*, 47(2), 150-160, Springer, DOI: 10.1007/s40098-016-0205-7.
* Borana, L., Yin, J., Singh, D., **Shukla, S.**, Pei, H., (2017), Influences of initial water content and roughness on skin friction of piles using FBG technique. *International Journal of Geomechanics*, 17(4), article no.04016097, USA, ASCE, DOI: 10.1061/(ASCE)GM.1943-5622.0000794.
* Tahasildar, J., Hanumantha Rao, B., **Shukla, S.**, (2017), Mineralogical compositions of some Indian expansive soils and their influence on swelling properties. *International Journal of Geosynthetics and Ground Engineering*, 3(1), article no.UNSP 5, Springer, DOI: 10.1007/s40891-016-0081-3.
* Shrivastava, N., Zen, K., **Shukla, S.**, (2017), Modelling of compaction grouting technique with development of cylindrical cavity expansion problem in a finite medium. *International Journal of Geosynthetics and Ground Engineering*, 3(December 2017), Article no.UNSP 40, DOI: 10.1007/s40891-017-0117-3.
* Pandey, L., **Shukla, S.**, Habibi, D., (2017), Resistivity profiles of Perth soil in leak detection test. *Geotechnical Research*, 4(4), 214-221, London, ICE Publishing, DOI: 10.1680/jgere.17.00014.
* Bprana, L., Yin, J., Singh, D., **Shukla, S.**, (2016), Interface behaviour from suction controlled direct shear test on completely decomposed granitic soil and steel surfaces. *International Journal of Geomechanics*, 16(6), Article number D4016008, American Society of Civil Engineers, DOI: 10.1061/(ASCE)GM.1943-5622.0000658.
* Rajsekhar, K., Sharma, PK., **Shukla, S.**, (2016), Numerical modeling of virus transport through unsaturated porous media. *Cogent Geoscience*, 2(1220444), 1-13, Taylor and Francis, DOI: 10.1080/23312041.2016.1220444.
* Sharma, PK., Kakani, S., **Shukla, S.**, (2016), Numerical study of contaminant transport in fractured porous rock with distance dependent dispersivity. *Journal of Water Resource and Hydraulic Engineering*, 5(2), 46-57, DOI: 10.5963/JWRHE0502001.
* Kranthikumar, A., Sawant, V., **Shukla, S.**, (2016), Numerical modeling of granular anchor pile system in loose sandy soil subjected to uplift loading. *International Journal of Geosynthetics and Ground Engineering*, 2(15), 7p., Springer, DOI: 10.1007/s40891-016-0056-4.
* Sharma, P., **Shukla, S.**, Pran, S., (2016), Experimental and numerical modeling of solute transport through fractured sedimentary rock mass. *ISH Journal of Hydraulic Engineering*, 22(3), 274-280, Taylor and Francis, DOI: 10.1080/09715010.2016.1201781.
* Kuranchie, A., **Shukla, S.**, Habibi, D., Hossain, M., (2016), Load-settlement behaviour of a strip footing resting on iron ore tailings as a structural fill. *International Journal of Mining Science and Technology*, 26(2), 247-253, DOI: 10.1016/j.ijmst.2015.12.010.
* Hossain, M., **Shukla, S.**, Habibi, D., (2016), Behaviour of an embedded footing on geotextile-reinforced sand. *Proceedings of the Institution of Civil Engineers: Ground Improvement*, 169(2), 120-133, Thomas Telford Services Ltd, DOI: 10.1680/grim.14.00022.
* Kuranchie, A., **Shukla, S.**, Habibi, D., (2016), Utilization of iron ore mine tailings for the production of geopolymer bricks. *International Journal of Mining, Reclamation and Environment*, 30(2), 92-114, Taylor & Francis, DOI: 10.1080/17480930.2014.993834.
* Sharma, P., **Shukla, S.**, Chaudhary, R., Swami, D., (2016), Modeling for solute transport in mobile-immobile soil column experiment. *ISH Journal of Hydraulic Engineering*, 22(2), 204-211, Taylor and Francis, DOI: 10.1080/09715010.2016.1155181.
* **Shukla, S.**, Shahin, M., Abu-Taleb, H., (2015), A note on void ratio of fibre-reinforced soils. *International Journal of Geosynthetics and Ground Engineering*, 1(3), 1-5, Springer, DOI: 10.1007/s40891-015-0030-6.
* Borana, L., Yin, J., Singh, D., **Shukla, S.**, (2015), A modified suction-controlled direct shear device for testing unsaturated soil and steel plate interface. *Marine Georesources and Geotechnology*, 33(4), 294-303, Taylor & Francis, DOI: 10.1080/1064119X.2013.843045.
* Hossain, M., **Shukla, S.**, Habibi, D., (2015), Effect of submergence on settlement and bearing capacity of surface strip footing on geotextile-reinforced sand bed. *International Journal of Geosynthetics and Ground Engineering*, 1(4), 4.1-4.11, Springer, DOI: 10.1007/s40891-014-0006-y.
* Hossain, M., **Shukla, S.**, Habibi, D., (2015), An improved method to increase the load-bearing capacity of strip footing resting on geotextile-reinforced sand bed. *Indian Geotechnical Journal*, 45(1), 98-109, Springer, DOI: 10.1007/s40098-014-0111-9.
* Kuranchie, A., **Shukla, S.**, Habibi, D., (2015), Electrical resistivity of iron ore mine tailings produced in Western Australia. *International Journal of Mining, Reclamation and Environment*, 29(3), 191-200, Taylor & Francis, DOI: 10.1080/17480930.2014.941551.
* Hossain, M., **Shukla, S.**, Habibi, D., (2015), Behavior of embedded strip footing on sand bed reinforced with multilayer geotextile layers with wraparound ends. *International Journal of Geotechnical Engineering*, 9(5), 437-452, United States, J Ross Publishing Inc., DOI: 10.1179/1939787914Y.0000000085.
* Sharma, P., Ojha, C., Swami, D., Joshi, N., **Shukla, S.**, (2015), Semi-analytical solutions of multiprocessing non-equilibrium transport equations with linear and exponential distance-dependent dispersivity. *Water Resources Management*, 29(14), 5255-5273, Springer, DOI: 10.1007/s11269-015-1116-6.
* **Shukla, S.**, (2015), Generalized analytical expression for dynamic active thrust from c-φ soil backfills. *International Journal of Geotechnical Engineering*, 9(4), 416-421, Fort Lauderdale, United States, Maney Publishing, DOI: 10.1179/1939787914Y.0000000076.
* Pandey, L., **Shukla, S.**, Habibi, D., (2015), Electrical resistivity of sandy soil. *Geotechnique Letters*, 5(3), 178-185, London, UK, I C E Publishing, DOI: 10.1680/jgele.15.00066.
* Kuranchie, A., **Shukla, S.**, Habibi, D., Mohyeddin Kermani, A., (2015), Utilisation of iron ore tailings as aggregates in concrete. *Cogent Engineering*, 2(1), 1-11, Abington, UK, Cogent OA, DOI: 10.1080/23311916.2015.1083137.
* Sharma, P., Sawant, V., **Shukla, S.**, Khan, Z., (2014), Experimental and numerical simulation of contaminant transport through layered soil. *International Journal of Geotechnical Engineering*, 8(4), 345-351, UK, Maney Publishing, DOI: 10.1179/1939787913Y.0000000014.
* Choudhury, D., Katdare, A., **Shukla, S.**, Basha, B., Ghosh, P., (2014), Seismic behaviour of earth retaining structures, design issues and requalification techniques. *Indian Geotechnical Journal*, 44(2), 167-182, Springer, DOI: 10.1007/s40098-014-0100-z.
* Kuranchie, A., **Shukla, S.**, Habibi, D., Zhao, X., Hossain, M., (2014), Studies on electrical resistivity of Perth sand. *International Journal of Geotechnical Engineering*, 8(4), 449-457, United States, J Ross Publishing Inc., DOI: 10.1179/1939787913Y.0000000033.
* **Shukla, S.**, (2014), Seismic passive earth pressure from the sloping c-ɸ soil backfills. *Indian Geotechnical Journal*, 44(1), 107-111, New Delhi, DOI: 10.1007/s40098-013-0045-7.
* Sawant, V., **Shukla, S.**, (2014), Effect of edge distance from the slope crest on the response of a laterally loaded pile in sloping ground. *Geotechnical and Geological Engineering: an international journal*, 32(1), 197-204, Netherland, Springer, DOI: 10.1007/s10706-013-9694-7.
* Jha, J., Choudhury, A., Gill, K., **Shukla, S.**, (2014), Behaviour of plastic waste fibre-reinforced industrial wastes in pavement applications. *International Journal of Geotechnical Engineering*, 8(3), 277-286, United States, J. Ross Publishing, DOI: 10.1179/1939787914Y.0000000044.
* Ting, C., Sivakugan, N., Read, W., **Shukla, S.**, (2014), Analytical expression for vertical stress within an inclined mine stope with non-parallel walls. *Geotechnical and Geological Engineering: an international journal*, 32(2), 577-586, Springer, DOI: 10.1007/s10706-014-9735-x.

**Conference Publications**

* Shah, SG., Bhogayata, AC., **Shukla, S.**, (2019), Feasibility of utilization of metalized waste in cohesionless soil. *Advances in Reinforced Soil Structures*, 49-54, Springer, DOI: 10.1007/978-3-319-63570-5\_5.
* Muthukumar, M., Sekar, S., **Shukla, S.**, (2018), Swelling and shrinkage behaviour of expansive soil blended with lime and fibres. *Advances in Reinforced Soil Structures Proceedings of the 1st GeoMEast International Congress and Exhibition, Egypt 2017 on Sustainable Civil Infrastructures*, 39-48, Cham, Switzerland, Springer, DOI: 10.1007/978-3-319-63570-5\_4.
* Jha, J., **Shukla, S.**, Choudhary, A., Gill, K., Verma, B., (2018), Stress-strain behaviour of sand with disc plate shaped reinforcement. *Advances in Reinforced Soil Structures Proceedings of the 1st GeoMEast International Congress Exhibition, Egypt 2017 on Sustainable Civil Infrastructures*, 29-38, Cham, Switzerland, Springer, DOI: 10.1007/978-3-319-63570-5\_3.
* Kirch Nienkotter Rocha, B., Mohyeddin Kermani, A., Lumantarna, E., **Shukla, S.**, (2017), Sensitivity of the Strut Model for an RC Infill-Frame to the Variations in the Infill Material Properties. *Australian Earthquake Engineering Society 2017 Conference Papers*, 10p., Australian Earthquake Engineering Society.
* Jha, J., Gill, K., Choudhary, A., **Shukla, S.**, (2015), Stress-strain Characteristics of fiber-reinforced rice husk ash. *Conference Proceedings: Geosynthetics 2015*, 134-141, Portland, Oregon, USA, Geosynthetics Materials Association.
* Choudhury, A., Jha, J., Gill, K., **Shukla, S.**, (2014), Utilization of fly ash and waste recycled product reinforced with plastic wastes as construction materials in flexible pavements. *Proceedings GeoCongress 2014 Technical Papers: Geo-Characterization and Modelling for Sustainability*, 3890-3902, Virginia, USA, ASCE, DOI: 10.1061/9780784413272.377.

Research Student Supervision

**Principal Supervisor**

* Doctor of Philosophy,  EXPERIMENTAL AND NUMERICAL ANALYSES OF STRIP FOOTING ON GEOTEXTILE-REINFORCED SOIL BED
* Master of Engineering Science,  STABILITY ANALYSIS OF ROCK SLOPES AGAINST PLANE FAILURE SUBJECTED TO SURCHARGE AND SEISMIC LOADS
* Master of Engineering Science,  ENGINEERING CHARACTERISTICS OF COMPACTED SAND-BENTONITE MIXTURES
* Master of Engineering Science,  BEHAVIOUR OF WASTE TYRE FIBRE-REINFORCED CEMENT-STABILISED PERTH SAND
* Master of Engineering Science,  WEDGE FAILURE ANALYSIS OF ANCHORED ROCK SLOPES SUBJECTED TO SURCHARGE AND SEISMIC LOADS
* Master of Engineering Science,  ELECTRICAL RESISTIVITY OF SANDY SOIL WITH WATER, LEACHATES AND SEAWATER
* Doctor of Philosophy,  LINER CHARACTERISATION AND LEAK DETECTION USING ELECTRICAL RESISTIVITY TECHNIQUES
* Doctor of Philosophy,  LOAD-SETTLEMENT AND STRESS-STRAIN BEHAVIOUR OF GEOSYNTHETIC-REINFORCED SANDY SOIL
* Master of Engineering Science,  ANALYSIS OF RIGHT-TURN LANE LENGTH IN LEFT-HAND TRAFFIC COUNTRIES AT SIGNALISED INTERSECTIONS OF URBAN ROADS
* Doctor of Philosophy,  CHARACTERISATION AND APPLICATIONS OF IRON ORE TAILINGS IN BUILDING AND CONSTRUCTION PROJECTS
* Master of Engineering Science,  PERMEABILITY CHARACTERISTICS OF FIBRE-REINFORCED PERTH SANDY SOIL
* Master of Engineering Science,  UCS AND CBR BEHAVIOUR OF PERTH SANDY SOIL REINFORCED WITH WASTE TYRE FIBRES AND CEMENT

**Associate Supervisor**

* Doctor of Philosophy,  EXPERIMENTAL STUDY OF OXYGEN TRANSFER AND AIR-WATER TWO-PHASE FLOW CHARACTERISTICS OF WATER JETS-IN-CROSSFLOWS
* Master of Engineering Science,  INTRINSIC VARIATIONS IN GEOMETRIC PROPERTIES OF NONLINEAR EQUIVALENT STRUT MODELS FOR INFILL-RC FRAMES