Curriculum Vitae

RAVI SANKAR JAKKA

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AREAS OF INTEREST

- Geotechnical Earthquake Engineering: Dynamic Site Characterization, Soil Liquefaction, Foundation Design, Seismic Slope Stability.
- Seismic Hazard Assessment, Local Site Effects, & Earthquake Early Warning.

PROFESSIONAL BACKGROUND

Designation	Institute	Period of Experience
Associate Professor	Dept. of Earthquake Engineering, Indian Institute of Technology, Roorkee (IIT R)	Since April, 2016
Asst. Professor	Dept. of Earthquake Engineering, Indian Institute of Technology, Roorkee (IIT R)	Dec., 2010 to April, 2016
Post Doctoral Fellow	Indian Institute of Science, Bangalore (IISc)	May 2010 to Dec., 2010
Sr. Project Officer	IIT Madras	Jan., 2010 to April 2010
Post Doctoral Employee	***University of California**, Riverside, **USA***	**March, 2008 to Dec., 2009**
Lecturer (Regular)	*National Institute of Technology, Jalandhar, Punjab (India)*	Dec., 2007 to Feb., 2008

ACADEMIC PERFORMANCE

Year	Exam/Degree	Institution	CGPA/ (%)	Distinction
2003-2007	Ph.D (Geotechnical Earthquake Engineering)	Indian Institute of Technology, Delhi	***9.5/10***	***National Doc. Fellowship***
2001-2003	M.Tech (Soil Mechanics and Foundation Engg.)	Indian Institute of Technology, Delhi	***9.4/10***	***DAAD Scholarship***
1997-2001	B.E (Civil Environ. Engg.)	Andhra University, Visakhapatnam, AP	77%	***University Gold Medal***
1994-1996	Intermediate	S.K.K.S.C.V.S. Junior College, Chilakaluripet, A.P.	84%	***College First***
1994	SSC	R.V.S.C.V.S. High School, Chilakaluripet, A.P.	80%	-

AWARDS AND RECOGNITIONS

1. Received quadrennial 'ISET TG Sitharam Mid-career Research Award for Innovations in Geotechnical Earthquake Engineering' in the year 2022 from the Indian Society of Earthquake Technology.
2. Member of ASCE, Geo-Institute technical committee on Earthquake Engineering and Soil Dynamics.
3. Appointed as an NCS-MoES expert committee member for a national project on 'Seismic Microzonation of 30-cities in India'.
4. Serving as Editor to the 'International Journal of Geotechnical Earthquake Engineering' since Jan. 2021 and 'ISET Journal of Earthquake Technology' since 2021.
5. Organizing Secretary to the 7th Int. Conf. on Recent Adv. in Geotech. Earthq. Engg. (7ICRAGEE)
6. Secretary of Indian Society of Earthquake Technology (ISET) for the terms 2017-2019 & 2019-2021 (4 years).
7. National Executive Committee member of Indian Geotechnical Society for the terms 2018-2020 & 2020-2022 (4 years).
8. Served as Associate Editor to the International Journal of Geotechnical Earthquake Engineering during August 2020-Jan. 2021.
9. A paper on "Study of Local Site Effects on Earthquake Early Warning" received best paper presentation award during Indian Geotechnical Conference-2019.
10. A paper on 'Near-Field Effects on Site Characterization using MASW Technique' was adjudged as the best paper published in the area of Soil Dynamics in 2018 from India by Indian Geotechnical Society.
11. Received '***Young Geotechnical Engineer Best Paper Award***' on 18th December, 2014 from Indian Geotechnical Society.
12. Received ***DST Young Scientist Research Initiation Grant*** from Gov. of India.
13. Received ***National Doctoral Fellowship*** from AICTE, which is awarded to only top 50 students in various fields by the Government of India for pursuing better research (Duration of Fellowship: 2004 - 2007).
14. Awarded ***DAAD Fellowship*** by German Government for pursuing M. Tech project work in Germany (Duration of Fellowship: May, 2002 – February, 2003).
15. Received university gold medal for academic record (1997 - 2001).
16. Awarded ***Sir Arthur Cotton Memorial*** medal for adjudging as a best outgoing student in B.Tech, by Indian Concrete Institute, AP local center, Visakhapatnam (2001).
17. Received a ***Merit Certificate*** *and* ***Cash Prize*** in Intermediate for obtaining highest marks in the college (1997).

(P.T.O)

LIST OF PUBLICATIONS

Total No. of Citations: 967 (Ref. Google Scholar) as on 3/01/2023

Total No. of Journal Publications: 44 (Published) + 1(Accepted)

Last 5 Years:

1. Pandey, B., and **Jakka, R.S.*,** "Selection of an Appropriate Bedrock for Site Amplification Studies", ***Natural Hazards*** *(Springer),* 112, 2167–2195 (2022).
   (Impact Factor: 3.10/2020; Quartile: Q1)
2. Rajput, S.S., **Jakka, R. S.*,** and Sinvhal, A., "A Spatiotemporal Risk Scenario for a Predictive Earthquake in Western Himalaya", ***Journal of Earthquake Engineering*** (*Taylor & Francis)* (2022 Online).
   (Impact Factor: 3.99/2020; Quartile: Q1)
3. Shukla, R.P. and **Jakka, R.S.*, "**Bearing Capacity and Failure Mechanism of Skirted Footings", ***Geomechanics and Engineering*** *(Techno-Press)*, 30(1):51-66 (2022).
   (Impact Factor: 3.22/2020; Quartile: Q2)
4. Desai, A. and **Jakka, R.S.*,** "Role of A-priori Information in Minimizing Uncertainties in MASW Testing", ***IGT Journal*** *(Springer),* 52(5):1182-1196(2022).
   (ESCI; SJR: 0.46; Scopus Indexed, Quartile: Q2)
5. Zachariah, J.P., and **Jakka, R.S.***, "Accounting for the Uncertainties in the Estimation of Average Shear Wave Velocity using VS-N Correlations", ***Front. Struct. Civ. Eng.*** *(Springer),* 15, 1199–1208 (2021).
   (Impact Factor: 2.37/2020; Quartile: Q2)
6. Marrapu, B.M., Kukunuri, A., and **Jakka, R.S.***, "Improvement in Prediction of Slope Stability and Relative Importance Factors using Artificial Neural Network", ***Geotechnical and Geological Engineering*** *(Springer),*39, 5879-5894 (2021).
   (ESCI; SJR: 0.54; Scopus Indexed; Quartile: Q2)
7. Pandey, B., and **Jakka, R. S.***, Kumar, A., and Sharma, M. L., "Site Characterization of Strong-Motion Stations of Himalaya and Adjoining Plains", ***Arab. J. Geosci.*** *(Springer)*, 14(879):1-21(2021).
   (Impact Factor: 1.83/2020; Quartile: Q2)
8. Shukla, R.P., and **Jakka, R.S.**, "Failure Mechanism and Slope Factors for a Footing Resting on Slopes", Magazine of Civil Engineering, 104(4): 1-15 (2021).
   (ESCI; SJR: 0.40; Scopus Indexed; Quartile: Q3)

9. Roy, N., and **Jakka, R.S.**, "Mapping Surface Wave Dispersion Uncertainty in *Vs* Profiles to $V_{S,30}$ and Site Response Analysis", ***Soil Dynamics and Earthquake Engineering*** *(Elsevier)*, 138:1-17(2020).

(Impact Factor: 3.72/2020; Quartile: Q1)

10. Kranthikumar, A. and **Jakka, R.S.***, "Effect of Edge Distance on Lateral Capacity of Piles in Cohesionless Soil Slopes", ***IGT Journal*** *(Springer),* 50(6):925-934 (2020).

(ESCI; SJR: 0.46; Scopus Indexed, Quartile: Q2)

11. Sharma, P., Mouli, B., Jakka, R.S. and Sawant, V.A., "Economical Design of Reinforced Slope Using Geosynthetics", ***Geotechnical and Geological Engineering*** *(Springer),* 38 (2):1631-1637(2020).

(ESCI; SJR: 0.54; Scopus Indexed; Quartile: Q2)

12. Roy, N., Desai, A., and Jakka, R.S., "Surface Wave Dispersion in a Layered Medium for Varying Subsurface Scenarios", ***International Journal of Geotechnical Earthquake Engineering*** *(IGI Global)*, 11(2):26-49 (2020).

(ESCI; SJR: 0.24; Scopus Indexed; Quartile: Q3)

13. Chamoli, B. P., Kumar, A., Chen, D.Y., Gairola, A., **Jakka, R.S.,** Pandey, B., Kumar, P., Rathore, G., "A prototype earthquake early warning system for northern India", ***Journal of Earthquake Engineering*** (*Taylor & Francis)*, 1-19, Published Online: 24 Jun 2019).

(Impact Factor: 3.99/2020; Quartile: Q1)

14. Shukla, R.P., and **Jakka, R.S.***, "Determination and Prediction of the Ultimate Bearing Capacity of a Strip Footing on Undrained Clayey Slopes", ***Acta Geotechnica Slovenica*****,** 16**(**2):50-65(2019).

(Impact Factor: 0.50/2020; Quartile: Q3)

15. Roy, N., and **Jakka, R.S.**, "Effect of Data Uncertainty and Inversion Non-Uniqueness of Surface Wave Tests on $V_{S,30}$ Estimation", ***Soil Dynamics and Earthquake Engineering*** *(Elsevier)*, 113:87-100(2018).

(Impact Factor: 3.72/2020; Quartile: Q1)

16. Shukla, R. P. and **Jakka, R. S.***, "Critical Setback Distance for a Footing Resting on Slopes under Seismic Loading", ***Geomechanics and Engineering*** *(Techno-Press)***,** 15(6): 1193-1205(2018).

(Impact Factor: 3.22/2020; Quartile: Q2)

17. Kumar, G., Kumar, A. and **Jakka, R. S.**, "The Particle Swarm Modified Quasi Bang-Bang Controller for Seismic Vibration Control", ***Ocean Engineering*** *(Elsevier),* 166:105-116(2018).

(Impact Factor: 3.80/2020; Quartile: Q1)

18. Roy, N., Shiuly, A., Sahu, R. B. and **Jakka, R. S.***, "Effect of Uncertainty in Vs-N Correlations on Seismic Site Response Analysis", ***Journal of Earth System Science***, 127(7)/103:1-21(2018).

(SCIE; SJR: 0.44; Scopus Indexed; Quartile: Q2)

19. Kumar, G., Kumar, A. and **Jakka, R. S.**, "An Adaptive LQR Controller Based on PSO and Maximum Predominant Frequency Approach for Semi-Active Control Scheme using MR Damper", ***Mechanics and Industry***, 19(1)/109:1-10(2018).

(SCIE; SJR: 0.26; Scopus Indexed; Quartile: Q3)

20. Marrapu, B.M. and **Jakka, R.S.***, "Assessment of Slope Stability Using Multiple Regression Analysis", ***Geomechanics and Engineering*** *(Techno-Press)*, 13(2):237-254(2017).

(Impact Factor: 3.22/2020; Quartile: Q2)

21. Shukla, R.P. and **Jakka, R.S.***, "Critical Setback Distance for a Footing Resting on Slopes", ***Acta Geotechnica Slovenica,*** 14(2):19-31(2017)**.**

(Impact Factor: 0.50/2020; Quartile: Q3)

22. Roy, N., **Jakka, R.S.*** and Wason, H.R., "A Study on Surface Wave Dispersion due to the Effect of Soft Layer in Layered Media" ***Geomechanics and Engineering*** *(Techno-Press),* 13(5):775-791(2017).

(Impact Factor: 3.22/2020; Quartile: Q2)

23. Roy, N. and **Jakka, R.S.***, "Near-Field Effects on Site Characterization using MASW Technique" ***Soil Dynamics and Earthquake Engineering*** *(Elsevier),* 97:289–303(2017).

(Impact Factor: 3.72/2020; Quartile: Q1)

24. Shukla, R.P. and **Jakka, R.S.***, "Discussion on 'Experiential and Numerical Studies of Circular Footing Resting on Confined Granular Subgrade Adjacent of Slope", ***International Journal of Geomechanics*** *(ASCE)*, 17 (2):1-3(2017).

(Impact Factor: 3.82/2020; Quartile: Q1)

Earlier Publications Before 2017:

25. Pandey, B., **Jakka, R.S.*,** Kumar, A., and Mittal, H., "Site Characterization of Strong Motion Recording Stations of Delhi Using Joint Inversion of Phase Velocity Dispersion and H/V Curve", ***Bulletin of the Seismological Society of America (BSSA),*** 106 (3):1254-1266(2016).

(Impact Factor: 2.91/2020; Quartile: Q1)

26. Pandey, B., **Jakka, R.S.*,** and Kumar, A., "Influence of Local Site Conditions on Strong Ground Motion Characteristics at Tarai Region of Uttarakhand, India", ***Natural Hazards*** *(Springer)*, 81(2):1073-1089(2016).

(Impact Factor: 3.10/2019; Quartile: Q1)

27. **Jakka, R.S.***, Hussain, Md., and Sharma, M. L., "Effects on Amplification of Strong Ground Motion due to Deep Soils", ***Geomechanics and Engineering*** *(Techno-Press)*, 8(5):663-674(2015).

(Impact Factor: 3.22/2020; Quartile: Q2)

28. **Jakka, R.S.***, and Garg, S., "Suitable Triggering Algorithms for Detecting Strong Ground Motions using MEMS Accelerometers", ***Earthquake Engineering and Engineering Vibrations*** *(Springer)*, 14(1):27-35(2015).

(Impact Factor: 2.14/2020; Quartile: Q1)

29. Nath, R.R., Hussain, Md., and **Jakka, R.S.**, "Effect of Bedrock Depth on Site Amplification: A Parametric Study for Different Soil Types", ***International Journal of Earthquake Engineering and Hazard Mitigation*** (IREHM), ISSN No.: 2282-7226, 3(2):29-36(2015).

30. **Jakka, R.S.**, Roy, N., and Wason, H.R., "Reply to comment on Implications of Surface Wave Data Measurement Uncertainty on Seismic Ground Response Analysis", ***Soil Dynamics and Earthquake Engineering*** *(Elsevier)*, 74:92-95(2015).

(Impact Factor: 3.72/2020; Quartile: Q1)

31. Desai, A., Shanker, D. and **Jakka, R.S.**, "Earthquake Induced Landslide Hazard Zonation of Nainital Region", ***Geosciences***, ISSN No.: 2163-1697, 5(2): 62-69(2015).

32. Roy, N., **Jakka, R.S.***, and Wason, H.R., "Reply to Comment on Effect of Surface Wave Inversion Non-Uniqueness on 1D Seismic Ground Response Analysis", ***Natural Hazards*** *(Springer)*, 75(1):983-989(2014).

(Impact Factor: 3.10/2019; Quartile: Q1)

33. **Jakka, R.S.***, Roy, N., and Wason, H.R., "Implications of Surface Wave Data Measurement Uncertainty on Seismic Ground Response Analysis", ***Soil Dynamics and Earthquake Engineering*** *(Elsevier)*, 61-62:239-245(2014).

(Impact Factor: 3.72/2020; Quartile: Q1)

34. Roy, N., **Jakka, R.S.**, and Wason, H.R., "Effect of Surface Wave Inversion Non-Uniqueness on 1-D Seismic Ground Response Analysis", ***Natural Hazards*** *(Springer)*, 68(2):1141-1153(2013).

(Impact Factor: 3.10/2019; Quartile: Q1)

35. Sitharam, T.G., Dash, H.K., and **Jakka, R.S.***, "Post Liquefaction Undrained Shear Behavior of Sand Silt Mixtures at Constant Gross Void Ratio", ***International Journal of Geomechanics*** *(ASCE)*, 13(4), 421-429(2013).

(Impact Factor: 3.82/2020; Quartile: Q1)

36. **Jakka, R.S.***, Shuily, A., and Ranjit Das, "Liquefaction Potential for Kolkata City", ***International Journal of Geotechnical Earthquake Engineering*** *(IGI Global)*, 4(2):18-33(2013).

(ESCI; SJR: 0.24; Scopus Indexed; Quartile: Q3)

37. **Jakka, R.S.***, Datta, M., and Ramana, G.V., "Seismic Slope Stability of Embankments Constructed With Pond Ash", ***Geotechnical and Geological Engineer*****ing** *(Springer)*, 29(5), 821-835(2011).

(ESCI; SJR: 0.54; Scopus Indexed; Quartile: Q2)

38. Chung, A.I., Neighbors, C., Belmonte, A., Miller, M., Sepulveda, H.H., Christensen, C., **Jakka, R.S.**, Cochran, E.S., and Lawrence, J. F., "The Quake-Catcher Network Rapid Aftershock Mobilization Program Following the 2010 M8.8 Maule, Chile Earthquake", ***Seismological Research Letters***, 82(4), 526-532(2011).

(Impact Factor: 3.75/2020; Quartile: Q1)

39. **Jakka, R. S.***, "Seismic Slope Stability of Ash Embankments: Site Specific Studies for Delhi Region", ***International Journal of Earth Sciences and Engineering***, ISSN 0974-5904, 4(6), 67-70(2011).

40. **Jakka, R. S.***, Ramaiah, B.J., and Ramana, G. V., "Dynamic Characterization of Settled Pond Ash Using Measured Shear Wave Velocity (Vs) and SPT-N Values: Correlation Between Vs & N", ***International Journal of Geotechnical Earthquake Engineering*** *(IGI Global)*, 2(1), 83-97(2011).

(ESCI; SJR: 0.24; Scopus Indexed; Quartile: Q3)

41. **Jakka, R. S.***, Datta, M., and Ramana, G. V., "Liquefaction Behavior of Loose and Compacted Pond Ash", ***Soil Dynamics and Earthquake Engineering*** *(Elsevier)*, 30(7), 580-590 (2010).

(Impact Factor: 3.72/2020; Quartile: Q1)

42. **Jakka, R. S.***, Cochran, E. S., and Lawrence, J. F., "Earthquake Source Characterization by the Isochrone Back Projection Method using Near-Source Ground Motions", ***Geophys. J. Int.***, 182, 1058-1072(2010).

(Impact Factor: 2.93/2020; Quartile: Q1)

43. **Jakka, R. S.***, Ramana, G. V., and Datta, M., "Shear Behavior of Loose and Compacted Pond Ash", ***Geotechnical and Geological Engineering*** (Springer), 28, 763-778(2010).

(ESCI; SJR: 0.54; Scopus Indexed; Quartile: Q2)

44. Cochran, E. S., Lawrence, J. F., Christensen, C. and **Jakka, R. S.**, "The Quake-Catcher Network: Citizen Science Expanding Seismic Horizons", ***Seismological Research Letters***, 80, 26-30 (2009).

(Impact Factor: 3.75/2020; Quartile: Q1)

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*Corresponding Author

LIST OF CONFERENCE PAPERS

International Conferences:

1. Zachariah, J.P., and **Jakka, R.S.**, "Utilization of Bagasse Fibre and Ash—An Open Door for Sustainable Development: Review and Future Insights", *Earthquake Geotechnics: Select Proceedings of 7th ICRAGEE 2021*, pp. 505-517, 2022.

2. Zachariah, J.P., and **Jakka, R.S.**, "Reliable Estimation of Shear Wave Velocity Using Various VS—N Correlations", *Earthquake Geotechnics: Select Proceedings of 7th ICRAGEE 2021*, Vol. 187, pp. 493, 2022.

3. Aswathi, T.S., and **Jakka, R.S.**, "Parametric Study of Seismic Slope Stability of Tailings Dam", *Conference on Performance-based Design in Earthquake. Geotechnical Engineering*, pp. 1914-1928, 2022.

4. Zachariah J.P., and **Jakka R.S.**, "Liquefaction Potential of Ash Pond using SPT", Seismic Hazards and Risk, *Proceedings of 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (7ICRAGEE 2021)*, Bangalore, India, 12-15 July, 2021.

5. Bashir, K., Shukla, R., and **Jakka, R.S.**, "Lateral Capacity of Skirted Footing Resting on Level Ground", *Proceedings of 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (7ICRAGEE 2021)*, Bangalore, India, 12-15 July, 2021.

6. Aswathi T.S., **Jakka, R.S.**, and Frost, D., "A Case Study of Las Palmas Tailings Dam Failure", *Proceedings of 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (7ICRAGEE 2021)*, Bangalore, India, 12-15 July, 2021.

7. Desai, A., and **Jakka, R.S.**, "Role of Borehole Information on Minimizing Uncertainties in Surface Wave Testing", *Proceedings of 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (7ICRAGEE 2021)*, Bangalore, India, 12-15 July, 2021.

8. Mugesh. A., Desai, A., **Jakka, R.S.**, and Kamal., "Influence of Local Site Effects on Earthquake Early Warning Parameters", *Proceedings of 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (7ICRAGEE 2021)*, Bangalore, India, 12-15 July, 2021.

9. Desai, A., and **Jakka, R.S.,** "Numerical Simulation of MASW Testing", *Proceedings of 17th World Conference on Earthquake Engineering (17WCEE 2021)*, Sendai, Japan, 27 Sept.-2 Oct, 2021.

10. Bashir, K., Shukla, R., and **Jakka, R.S.**, "Skirted Footing for Enhancing Bearing Capacity", *Proceedings of 17th World Conference on Earthquake Engineering (17WCEE 2021)*, Sendai, Japan, 27 Sept.-2 Oct, 2021.

11. Kranthikumar, A., and **Jakka, R. S**. "Dynamic Response of a Pile Resting on Sloping Ground under Different Earthquake Motions", *Proceedings of 17th World Conference on Earthquake Engineering*, Sendai, Japan, 27 Sept.-2 Oct, 2021.

12. Rathore, G., Kumar, P., Chamoli, B., Kamal, Sharma, M.L., **Jakka, R.S.**, and Kumar, A. (2021) "Implementation and working of Earthquake Early Warning System for Northern India", 3rd AOGS-EGU Joint Conference, NATHAZARDS2021, 20-22 Sept 2021.

13. Rathore, G., Kamal, **Jakka, R.S.**, Sharma, M.L., and Kumar, A. (2021) "Development of Earthquake Early Warning Dissemination System for Northern India", AGU21 Fall Meeting, New Orleans, USA, 13 -17 Dec 2021.

14. Marrapu, B.M. and **Jakka, R.S**., "A Comparative Study on the Performance of ANN, MLR and MNR in the Assessment of Slope Stability for Kalla-Coonoor Hill Road Stretch of Nilgiris", *International Conference on Emerging Trends in Engineering (ICETE),* pp. 105-114, Hyderabad, India, 2020.

15. Desai, A., Roy, N., **Jakka, R.S.**, Narayan, J.P. and Kranthikumar, A. "Influence of source characteristics on the uncertainties in MASW survey", *Proceedings 7th International Conference on Earthquake Geotechnical Engineering (VII ICEGE)*, Vol. 4, pp. 2068-2075, Rome, Italy, 17-20 June, 2019.

16. Pandey, B., **Jakka, R. S.,** and Kumar, A. "Influence of Bedrock Depth on Site Amplification for Strong Motion Stations of Northern India", *16th European Conference on Earthquake Engineering,* Paper ID: 11381, Thessaloninki, Greece, 18-21 June, 2018.

17. **Jakka, R.S.**, "Uncertainties in Site Characterization using Surface Wave Methods and their Consequences over Seismic Site Response", *AOGS 14th Annual Meeting*, Extended Abstract, Singapore, 6-11 August, 2017.

18. Rajput, S. S., Mridula, Sinvhal, A. and **Jakka, R. S.,** "Seismic Hazard and Risk Assessment of Himachal Pradesh and its contiguous area", *14th Annual meeting Asia Oceania Geosciences Society*, Singapore, 6-11 August, 2017.

19. Pandey, B., **Jakka, R.S.,** Kumar, A., and Sharma, M.L. (2017), "Site Characterization and Site Amplification Studies for Strong Motion Recording Stations of Kumaun Region of Uttarakhand", *14th Annual meeting Asia Oceania Geosciences Society*, Extended Abstract, Singapore, 6-11 August, 2017.

20. Jose, P., **Jakka, R.S.** and Pandey, A.D., "Machine Foundations: A Review of Failures", *Proceedings of 5th International Conference on Forensic Geotechnical Engineering*, pp. 264-270, Bangalore, India, 8-10 December, 2016.

21. **Jakka, R.S.,** Pandey, B., Kumar, A. and Gupta, A.K., "Local Site Effects at Strong Motion Recording Stations of Delhi", *6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, paper no. 191, pp. 1-7, Greater Noida, India, 1-6 August, 2016.

22. Roy, N., **Jakka, R.S.** and Wason, H.R., "Surface Wave Data Uncertainty and Its Consequence on Seismic Design Ground Motion", *6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, paper no. 120, pp. 1-6, Greater Noida, India, 1-6 August, 2016.

23. Shukla, R.P. and **Jakka, R.S.,** "Seismic Bearing Capacity of Skirted Footing on Slope", *6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, paper no. 174, pp. 1-6, Greater Noida, India, 1-6 August, 2016.

24. Marrapu, B.M. and **Jakka, R.S.**, "Influence of Seismic Loading on Slope Instabilities", *6th International Conference on Earthquake Geotechnical Engineering*, *Christchurch(6ICEGE),* pp. 2425-2432, New Zealand, 1-4 November, 2015.

25. Marrapu, B.M. and **Jakka, R.S.**, "Slope Stability Assessment of Kalla - Coonoor Hill Road Stretch of Nilgiris: A Comparative Study of Multiple Regressions and Neural Network", *International conference on Engineering Geology in new millennium,* pp. 1-10, New Delhi, India, 27-29 October, 2015.

26. Shukla, R.P. and **Jakka, R.S.**, "A Critical Review on Seismic Bearing Capacity of a Strip Footing on Sloping Ground", *International Symposium on Geohazards: Science, Engineering and Management,* pp. 449-458, Kathmandu, Nepal, 20-21 November, 2014.

27. Marrapu, B.M. and **Jakka, R.S.**, "Landslide Hazard Zonation Methods: A Crithical Review", *2nd International Conference on Sustainable Innovative Techniques in Civil and Environmental Engineering (SITCEE-2014),* Vol. 5, pp. 215-220, New Delhi, 4-5 January, 2014.

28. Hussain, Md., **Jakka, R.S.**, and Sharma, M. L., "Effects of Deep Soil Deposits on Strong Ground Motion", *Proc. Of International Conference on Challenges in Disaster Mitigation and Management*, pp.1-4, Roorkee, India, 15-17 February, 2013.
29. Nath, R.R., and **Jakka, R.S.**, "Effect of Bed-Rock Depth on Site Classification", *15th World Conference on Earthquake Engineering*, pp. 1-9, Lisbon, Portugal, 24-28 September, 2012.
30. Marrapu, B.M., and **Jakka, R.S.**, "Analysis of a Road Embankment with Pond Ash in an Active Seismic Region", *15th World Conference on Earthquake Engineering*, pp. 1-9, Lisbon, Portugal, 24-28 September, 2012.
31. Kirar, B., Maheshwari, B.K., and **Jakka, R.S.**, "Dynamic Properties of Solani Sand Reinforced with Coir Fibers", *15th World Conference on Earthquake Engineering*, pp. 1-10, Lisbon, Portugal, 24-28 September, 2012.
32. **Jakka, R. S.**, and Sitharam, T.G., "Future Perspectives of Pond Ash Utilization", *The First US-India Workshop on Global Geoenvironmental Engineering Challenges*, pp. 1-6, New Delhi, India, 7th November, 2010.
33. **Jakka, R. S.**, Datta, M., and Ramana, G. V., "Shear Behavior of Impounded Ash", *Sixth International Congress on Environmental Geotechnics*, vol. 1, pp. 582-587, New Delhi, India, 8-12 November, 2010.
34. Ramaiah, B.J., **Jakka, R. S.**, and Ramana, G. V., "Shear Wave Velocity Measurements at Slurry Deposited Coal Ash Ponds in Delhi, India", *Sixth International Congress on Environmental Geotechnics*, vol. 1, pp. 578-581, New Delhi, India, 8-12 November, 2010.
35. Lawrence, J. F., Cochran, E. S., Christensen, C.M., **Jakka, R. S.,** and Chung, A.I., "The Quake-Catcher Network: A Community-Led, Strong-Motion Network with Implications for Earthquake Advanced Alert", AGU Meeting, San Francisco, CA, 2009.
36. **Jakka, R. S.**, Cochran, E. S., Lawrence, J. F., Christensen, C.M., "Early Source Characterization of Earthquakes using the Back Projection Method", AGU Meeting, San Francisco, CA, 2008.
37. Lawrence, J. F., Cochran, E. S., Christensen, C. M., and **Jakka, R. S.**, "Distributed Computing and MEMS Accelerometers: The Quake Catcher Network", AGU Meeting, San Francisco, CA, 2008.
38. Datta, M., and **Jakka, R. S.,** "Geotechnical Evaluation and Control Measures for Slope Stability", *International workshop on seismic evaluation and strengthening of existing structures*, Invited Lecture 8, pp. 8.1-8.20, Shimla, 15 -16 June, 2007.
39. **Jakka, R. S.**, Datta, M. and Ramana, G. V., "Dynamic Stability of Tailings Dam", *International congress on Computational Mechanics and Simulation (ICCMS-06)*, pp. 2004-2010, IIT Guwahati, India, 2006.
40. **Jakka, R. S.**, Datta, M., and Ramana, G. V., "Evaluation of Seismic Stability of Coal Ash Embankments", *International Congress on flyash utilization (Fly Ash India 2005)*, pp. IV 8.1-15, TIFAC, DST, New Delhi, India, 2005.

41. **Jakka, R. S.,** and Ramana, G. V., "Site Response Analysis of Kandla Port during Bhuj Earthquake", *International conference on advances in structural dynamics and its applications (ICASDA-2005),* pp. 403-414, GITAM, Visakhapatnam, India, 2005.

National Conferences:

42. Shukla, R.P., and Jakka, R.S., "Footing Resting on Clayey Slopes", *Indian Geotechnical Conference IGC2023,* pp. 217-227, 2023.

43. Pandey, B., Jakka, R.S., and Kumar, A., "Influence of Bedrock on Site Response", *Proceedings of the 7th Indian Young Geotechnical Engineers Conference,* pp. 363-375, 2022.

44. Shukla, R.P. and **Jakka, R.S.**, "Footing Resting on Clayey Slopes", *Proceedings Indian Geotechnical Conference*, NIT Trichy, Tamilnadu, India, December 16-18, 2021.

45. Marrapu, B.M., and **Jakka, R.S.**, "Sensitivity Analysis of Slope Stability Parameters Using Neural Network", *Proceedings Indian Geotechnical Conference*, Tiruchi, India, 16-18, December, 2021.

46. Kuili, S., Singh, P., and **Jakka, R.S.**, "Implementation of Stochastic Method in Quantifying the Uncertainties Associated with Strip Footing Stability", *Proceedings 8th Indian Young Geotechnical Engineering Conference (8IYGEC)*, Chennai, India, 21-23 October, 2021.

47. Desai, A., and **Jakka, R. S.,** "Effect of A-priori Information on the Uncertainties in MASW Test", *Indian Geotechnical Conference on Geotechnics for Infrastructure Development & Urbanization*, Paper ID:Th5/52, pp. 1-7 , Surat, India, 19 –21 December, 2019.

48. Kranthikumar, A. and **Jakka, R. S., "**Behavior of Large Diameter Pile Resting on Sloping Ground", Indian Geotechnical Conference on Geotechnics for Infrastructure Development & Urbanization, Paper ID:Th10/70, pp. 1-9, Surat, India, 19 –21 December, 2019.

49. Mugesh, A., Desai, A., **Jakka, R. S.,** and Kamal, "Study of Local Site Effects on Earthquake Early Warning", Indian Geotechnical Conference on Geotechnics for Infrastructure Development & Urbanization, Paper ID:Th5/96, pp. 1-11, Surat, India, 19–21 December, 2019.

50. **Pandey, B.**, Jakka, R. S., and Kumar, A., "Influence of Bedrock on Site Response", *7th Young Indian Geotechnical Engineers Conference, Silchar, Assam, India.* 15-16 March, 2019.

51. Kranthikumar, A., **Jakka, R. S.,** and Singh, Y. "Dynamic Response Analysis of a Concrete Dam under Seismic Loading Conditions", *16th Symposium on Earthquake Engineering **16SEE***, IIT Roorkee, India, 20-22 December, 2018.

52. Kranthikumar, A., **Jakka, R. S.** and Shukla, R. P., "Behavior of Single Pile and Pile Groups Subjected to Abrupt Collapse of a Retaining Wall", In *Proceedings of DFI-India 2018: 8th Conference on Deep Foundation Technologies for Infrastructure Development in India*, Paper Id: 3169, pp. 280-285, Gandhinagar, India, 2018.

53. Rajput, S. S., Sinvhal, A. and **Jakka, R. S.,** "Seismic Risk Assessment: A Case Study for Dehradun", *16th Symposium on Earthquake Engineering* ***16SEE***, IIT Roorkee, India, 20-22 December, 2018.

54. Rajput, S. S., **Jakka, R. S.** and Sinvhal, A., "Identification of Seismo-tectonically Susceptible Area in North Western Himalaya using Pattern Recognition", *Indian Geotechnical Conference* ***IGC2018,*** IISc Bangalore, India, 13-15 December, 2018.

55. Rathore, G., Kumar, A., **Jakka, R.S.** and Chamoli, B.P., "Development of Earthquake Early Warning Siren for Regional Earthquake Early Warning System in India". *16th Symposium on Earthquake Engineering* ***16SEE***, IIT Roorkee, India, 20-22 December, 2018.

56. Roy, N., **Jakka, R.S.** and Wason, H.R., "Effect of Test Setup Parameters on Surface Wave Dispersion", *Indian Geotechnical Conference* ***IGC2017,*** pp. 1-4, Guwahati, India, 14-16 December, 2017.

57. Desai, A.S., and **Jakka, R.S.,** "Effect of Uncertainty in Soil Type on Seismic Site Response", *Indian Geotechnical Conference* ***IGC2017,*** pp. 1-4, Guwahati, India, 14-16 December, 2017.

58. **Jakka, R.S.** and Roy, N., "Uncertainties in Site Characterization Using Surface Wave Techniques and their Effects on Seismic Ground Response", *Indian Geotechnical Conference* ***IGC2017,*** pp. 1-8, Guwahati, India, 14-16 December, 2017.

59. Sharma, P., Mouli, B., **Jakka, R.S.,** and Sharma, M.L., "Design of Reinforced Slope using Geosynthetics", *National Conference on Numerical Modeling in Geomechanics,* pp. 243-248, Roorkee, India, 3-4 March, 2017.

60. Agarwal, J. and **Jakka, R.S.**, "Investigations on a Geosynthetic Reinforced Bearing Layer under Static and Dynamic Loading", *Indian Geotechnical Conference* ***IGC2016,*** paper no. 201, pp. 1-4, Chennai, India, 15-17 December, 2016.

61. Pandey, B., **Jakka, R.S.** and Kumar, A., "Study of Local Site Effects for Strong Motion Recording Stations of Delhi", *Indian Geotechnical Conference* ***IGC2016,*** paper no. 446, pp. 1-4, Chennai, India, 15-17 December, 2016.

62. Chamoli, B.P., Pandey, B., Kumar, P., Rathore, G., **Jakka, R.S.,** Gairola, A. and Kumar, A., "Development of Earthquake Early Warning System for Northern India." Proceedings of ISPRS WG VIII/1 Workshop on Geospatial Technology for Disaster Risk Reduction, Jaipur, India, 17 December, 2015.

63. Pandey, B., **Jakka, R.S.**, and Kumar, A., "Site Characterization of Strong Motion Stations in Tarai Region of Uttarakhand" Proceedings of ISPRS WG VIII/1 Workshop on Geospatial Technology for Disaster Risk Reduction, Jaipur, India, 17 December, 2015.

64. Marrapu, B.M. and **Jakka, R.S.**, "Slope Stability Assessment using Multiple Regression Analysis for Kalla-Coonoor Hill Road Stretch of The Nilgiris", *Indian Geotechnical Conference **IGC2015,*** pp. 1-10, Pune, India, 17-19 December, 2015.

65. Shukla, R.P. and **Jakka, R.S.**, "Seismic Analysis of a Footing Subjected to Moment on Sloping Ground", *Indian Geotechnical Conference **IGC2015,*** pp. 1-8, Pune, Maharashtra, India, 17-19 December, 2015.

66. Varkey, D. and **Jakka, R.S.**, "Dynamic Simulation of Pile Driving using Coupled Eulerian-Lagrangian Method", *Indian Geotechnical Conference **IGC2015,*** pp. 1-9, Pune, Maharashtra, India, 17-19 December, 2015.

67. Shukla, R.P. and **Jakka, R.S.,** "A Critical Review on Bearing Capacity of a Strip Footing on Sloping Ground", *5th Young Indian Geotechnical Engineers Conference*, pp. 58-65, Vadodara, India, 14-15 March, 2015.

68. Srivastava, A.K., Sharma, M.L., Paul, D.K., Das, J. and **Jakka, R.S.**, "Deep Soil Characteristics in the Vicinity of Himalayas", *Proc. of 15th Symposium on Earthquake Engineering*, pp. 74-86, Roorkee, India, 11-13 December, 2014.

69. Kumar, A., Mittal, H., Chamoli, B.P., Gairola, A., and **Jakka, R.S.**, "Earthquake Early Warning System for Northern India", *Proc. of 15th Symposium on Earthquake Engineering*, pp. 231-238, Roorkee, India, 11-13 December, 2014.

70. Roy, K. and **Jakka, R.S.**, "Finite Element Modeling of Liquefaction on Layered Soil", *Proc. of Indian Geotechnical Conf. IGC-2014*, pp. 1564-1571, Kakinada, India, 18-20 December, 2014.

71. Marrapu, B.M. and **Jakka, R.S.**, "Application of Artificial Neural Network for the Assessment of Slope Stability", *Proc. of Indian Geotechnical Conf. IGC-2014*, pp. 2162-2165, Kakinada, India, 18-20 December, 2014.

72. Shukla, R.P. and **Jakka, R.S.**, "Bearing Capacity of Footings on Slopes", *Proc. of Indian Geotechnical Conf. IGC-2014*, pp. 1993-1996, Kakinada, India, 18-20 December, 2014.

73. Shukla, R.P. and **Jakka, R.S.**, "Critical Review of Pore Pressure Predictive Models", *Proc. of Indian Geotechnical Conf. IGC-2014*, pp. 1637-1644, Kakinada, India, 18-20 December, 2014.

74. Sharma, M. L., A. K. Srivastava, D. K. Paul, J. Das and **Jakka, R.S.**, "Seismic Microzonation on Deep Soils – A Case Study for Roorkee, India", *Workshop on Status of Natural Hazards in Himalachal Pradesh*, CUHP, 6-8 November, 2014.

75. **Jakka, R.S.**, and Roy, N., "Effect of Uncertainty of Bedrock Type & Its Location on Seismic Site Characterization", *Proceedings of Indian Geotechnical Conference*, pp. 1-4, Delhi, India, 13-15 December, 2012.

76. Roy, N., **Jakka, R.S.**, and Wason, H.R., "Effect of Uncertainties in Site Characterization using Surface Wave Techniques", *Proceedings of Indian Geotechnical Conference*, pp. 1-4, Delhi, India, 13-15 December, 2012.
77. Roy, N., Wason, H.R., and **Jakka, R.S.**, "Uncertainty in Geotechnical Site Characterization using Surface Wave Techniques - A Review", *ISET Golden Jubilee Symposium*, pp. 1-9, Roorkee, India, 20-21 October, 2012.
78. **Jakka, R.S.**, "Earthquake-Induced Landslide Risk Assessment", *National Conference and Field Study on Landslide Management,* pp. 1-18, NIDM, Nainital, India, 22-24 March, 2012.
79. Roy, N., **Jakka, R.S.**, Wason, H.R., "Effect of Uncertainties in Site Characterization on Landslide Hazard Assessment", *National Conference and Field Study on Landslide Management,* pp. 1-9, NIDM, Nainital, India, 22-24 March, 2012.
80. **Jakka, R. S.,** and Ramana, G. V., "Influence of Local Soil Conditions on Ground Response", *National conference on Earthquake Disaster: Technology and Management (EARTH-2006),* pp. I 19-22, NIT Allahabad, India, 2006.
81. **Jakka, R. S.,** and Ramana, G. V., "One Dimensional Modeling of Ground Response", *National conference* on *National Disaster Management(NDM),* pp. 113-119, Andhra University, Visakhapatnam, 2006.
82. **Jakka, R. S.,** and Kiran T., "Computer Based Cost Models for Effective Management of Housing Schemes", *National level student symposium* (*Nirmitee-2000),* pp. 1-15, Maharastra Institute of Technology, Pune, 2001.

BOOKS EDITED/MATERIALS PREPARED

Edited three Springer book volumes: Advances in Earthquake Geotechnics, Earthquakes & Structures, and Earthquake Geotechnics, with the selected publications of 7th International Conference on Geotechnical Earthquake Engg. (7ICRAGEE).

Edited one more book volume on 'Theory and Practice in Earthquake Engineering and Technology' with the contributions from the speakers of ISET webinar series.

Edited three Springer book volumes: 1. Latest Developments in Geotechnical Earthquake Engineering and Soil Dynamics, 2. Local Site Effects and Ground Failures & 3. Soil Dynamics. All these books received more than 10,000 downloads within 6months of their publication.

Prepared a technical document titled "Geotechnical/ Geophysical Investigations for Seismic Microzonation Studies of Urban Centres in India" for National Disaster Management Authority (NDMA), Government of India, along with Prof. T.G. Sitharam.

Edited proceedings of 2-Day National Workshop on "Assessment & Mitigation of Liquefaction Hazards for Seismic Microzonation", 27-28 November, 2015.

Edited proceedings of 1-Day QIP workshop on “Challenges in Seismic Site Characterization and Solutions through Recent Developments”, 10th December, 2014.

Developed course materials for the short-term courses: “Geotechnical Earthquake Engineering” & “Seismic Safety of Earth and Rockfill Dams”.

Developed material for the pedagogy course on Ground Improvement Techniques. It was sponsored by MHRD.

DETAILS OF PATENTS

Filed one patent on Bio-Inspired Skirted Foundation and three on various aspects of Earthquake Early Warning system. One more patent on the application of MICP to address the strength degradation of bagasse fibres, is under process.

SUMMARY OF CONSULTANCY PROJECTS COMPLETED

Number of Consultancy Projects as a PI : 05 (Completed)

Total Amount : 96.45 Lakhs

Worked in several other site specific hazard estimation projects of the department as a Co-PI along with other faculty members.

(P.T.O)

SUMMARY OF SPONSORED RESEARCH PROJECTS

Projects as a PI

S.No.	Title of Project	Funding Agency	Financial Outlay	Year of start & total period	Co-PI	Status Started or completed or in progress
01	Uncertainties in Site Characterization using Surface Wave Techniques and Its Implication	DST Young Scientist	**27.58 Lakhs**	18/2/2016 (3-years)	-	Completed on **17/2/2019**
02	Site Characterization and Attenuation Studies for Garhwal-Kumaun Himalaya and Delhi Region	MoES	**23.25 Lakhs**	29/1/2016 (3-years)	Prof. M.L Sharma and Prof. A. Kumar	Completed on **30/4/2019**
03	Low Cost Sensors for Recording Earthquake Ground Motions	Faculty Initiation Grant, IITR	2.55 Lakhs	May 2011 (3 years)	-	Completed
04	Seismic Design and Safety Evaluation of Earth and Rockfill Dams	DRIP, CWC. Sub-project under Capacity Building of IIT Roorkee in the Area of Dam Safety	**85 Lakhs**	Nov., 2017 (4 years)	-	Ongoing
05	Developing Suitable Pedagogical Methods for Various Classes, Intellectual Calibers and Research in e-Learning	MHRD project	149 Lakhs	April 2013 (4 years)	Handled as institute coordinator cum PI of the project. (Prof. Amita Sinvhal was the coordinator from 1.4.2013 to 30.6.2016)	Completed on Sept. 2017 (A total of 19 out of 22 courses were developed during my tenure)

Projects as a Co-PI

S.No.	Title of Project	Funding Agency	Financial Outlay	Year of start & total period	Name of P.I. and other investigators	Status Started or completed or in progress
01	Establishment of Earthquake Early Warning System for Uttarakhand	USDMA of Government of Uttarakhand	**306 Lakhs**	June, 2017 (2-years)	Prof. Kamal (PI), Prof. ML Sharma, **Dr. Ravi S. Jakka**	Ongoing
02	Next Generation Earthquake Loss Estimation Tool for Hilly Regions	SERB	**68.12 Lakhs**	Jan., 2019 (3-years)	Prof. Yogendra Singh, **Dr. Ravi S. Jakka** and Dr. Putul Haldar.	Ongoing
03	Development of Earthquake Early Warning System for Northern India	MoES, New Delhi	**375 Lakhs**	June, 2013 (3-years)	Prof. A Kumar (PI); Prof. A. Gairola and **Dr. Ravi S. Jakka**	Completed
04	Strong Ground Motion Studies and Its Applications	MoES, New Delhi	164.7 Lakhs	2011 (2-years)	Prof. Ashok Kumar(PI) along with other Co-PIs.	Completed
05	Capacity Building of IIT Roorkee in the Area of Dam Safety under DRIP	CWC	**10.92 crores**	Nov., 2017	Prof. N. K. Goel along with other Co-PIs.	Ongoing

(P.T.O)

THESIS SUPERVISED:

PhD Theses Supervised

No. of Ph.D Thesis Guided : 08 (Completed)
: 09 (On going)

S.No.	Thesis Topic	Year Awarded	Name of the Scholar	Name of Co-Supervisor (if any)
1	Uncertainties in the Site Characterization using Surface Wave Technique	2015	Narayan Roy	Prof. HR Wason
2	Dynamic Stiffness Characteristics of Unreinforced and Reinforced Sands	2017	Bablu Kirar	Prof. BK Maheshwari
3	Geotechnical Hazard Assessment of Soil Slopes in Hilly Region	2018	Balendra Mouli	-
4	Site Characterization and Attenuation Studies for Northern India	2018	Bhavesh Pandey	-
5	Bearing Capacity of Skirted Footing on Slopes	2019	Rajesh Shukla	-
6	Development and Optimization of Controllers for Mitigation of Seismic Vibrations	2019	Gaurav Saini	Prof. Ashok Kumar
7	Identification of Seismo-Tectonically Susceptible Areas and Hazard Assessment in Western Himalaya	2022	Swati Singh Rajput	Prof. Amita Sinvhal
8	Earthquake Early Warning Dissemination System & Applications	2022	Govind Rathod	Prof. Ashok Kumar
9	Implications of Uncertainties in Site Characterization on Seismic Ground Response	On Going	Aniket Desai	-
10	Seismic Response Analysis of Pile Foundations on Sloping Ground	On Going	Kranthikumar, Alla	-
11	Performance-based design of Foundations	On Going	Ravi Kiran Nandyala	Prof. Y. Singh
12	Seismic Slope Stability of Tailings Dam	On Going	Ashwati, T. S.	-
13	Bio-inspired Inclined Skirted Footing for Bearing Capacity Enhancement	On Going	Khalid Bashir	-
14	Influence of Structural Response on Earthquake Early Warning Parameters	On Going	Mugesh, A.	Prof. Kamal
15	Effective Utilization of Bagasse as a Potential Reinforcement to Improve the Strength and Liquefaction Resistance of Geomaterials	On Going	Jithin P Zachariah	-
16	Seismic Response of Relief shelf Retaining Walls	On Going	Saikat Kuili	-
17	Role of Bedrock on Site Amplification Studies	Just Started	Jaisingh Verma	-

M.Tech. Dissertations Guided

No. of M.Tech Dissertations Guided : 41 (Completed)
: 04 (On going)

S.No.	Thesis Title	Year Awarded	Name of the Student	Co-Supervisor
1	Seismic Slope Stability Analysis Of Ash Embankments	2012	Balendra Mouli	Solo
2	Influence Of Local Site Conditions On Strong Ground Motion	2012	Ritu Raj Nath	Solo
3	Feasibility Study For Development Of Low Cost Sensor Accelerograph And Its Triggering Algorithms	2012	Sidharth Garg	Solo
4	Influence Of Local Site Conditions On Strong Ground Motion Characteristics At Tarai Region Of Uttarakhand	2013	Bhavesh Pandey	Prof. Ashok Kumar
5	Study Of Noise Characteristics Of Strong Motion Sensor And Development Of Software For Real Time Testing Of EEW Algorithms	2013	Bhanu Chamoli	Prof. Ashok Kumar
6	Development Of A Monte-Carlo Inversion Technique For MASW Data	2013 (**IDD Program**)	Anil Kumar	Prof. RGS Sastry, **Earth Science Dept.**
7	Evaluation Of Dynamic Response Of Deep Soils	2013	Md. Hussain	Prof. ML Sharma
8	Modelling Of Soil Liquefaction By Finite Element Method	2014	Krishanu Roy	Solo
9	Estimation Of Earthquake Epicentral Distance For Earthquake Early Warning System	2014	Abhishek Sharma	Prof. Ashok Kumar
10	Surface Wave Propagation In Multilayered Soil Media Due To An Active Source	2014	Kavita Tandon	Prof. HR Wason
11	Influence Of Local Site Effects On Earthquake Early Warning System	2014	Shashi Pratap Singh	Prof. Ashok Kumar
12	Deep Soil Effect On Strong Ground Motion Characteristics	2014	Shivani Singh	Prof. ML Sharma
13	Pine Needle Reinforced Soil For Road Embankment Slope Protection – A Laboratory Study	2014	Vivek Singh	Dr. G.D. Ransinchung, **Civil Engg. Dept.**
14	Effect On Uncertainty Of Bedrock Type & Its Location On Seismic Site Characterization	2015	Ruchika Saini	Solo
15	Landslide Hazard Zonation	2015	Aniket Desai	Dr. Daya Shanker
16	Deep Soil Effects On Site Amplification	2015	Deepika Sayana	Prof. ML Sharma
17	Testing Of EEW Algorithms Using Model Systems	2015	A.Shivaditya	Prof. Ashok Kumar
18	Numerical Simulation Of Driven Pile Problem	2015	Divya Varkey	Under **DAAD Scholarship**

(Contd..)

S.No.	Thesis Title	Year	Name of the Student	Co-Supervisor
19	Earthquake Induced Landslide Hazard Zonation	2016	Himanshu Rana	Solo
20	Foundations over Reinforced Soils	2016	Jyoti Agarwal	Under **DAAD Scholarship**
21	Study on Near-field Effects on Site Characterization using Surface Wave Techniques	2017	Raksha Gayakwad	Prof. JP Narayan
22	Evaluation of Deep Soil Effects on Seismic Response of Roorkee Soils	2017	Saurabh K. Mangal	Prof. ML Sharma
23	Seismic Analysis of Foundations over Reinforced Soil	2017	Shivam Gupta	Solo
24	Experimental and Analytical Studies of Soil Amplification	2017	Kuldeep Gusaiwal	Solo
25	Site Amplification and Attenuation Studies in Garhwal-Kumaon and Delhi Region	2017	Kuldeep Khichar	Prof. ML Sharma
26	Validity of Closed Form Solutions for Machine Foundations	2017	Priya Jose	Mr. AD Pandey
27	Uncertainty in Site Characterization using Surface Wave Methods	2017	Rohit Rana	Prof. JP Narayan
28	Interference of Footings on Sloping Ground	2018	Tadavarthi Sreeharsha	Solo
29	Earthquake Induced Shallow Foundation Settlements	2018	Parvathy Pavanan S	Solo
30	Piles on Sloping Ground	2018	Jitesh Sawanni	Solo
31	Local Site Effects on Earthquake Early Warning	2018	Aarti Taneja	Prof. Ashok Kumar
32	Site Amplification Studies for Haridwar	2018	Rinku	Prof. ML Sharma
33	Assessment of Liquefaction Potential	2018	Abdur R. Nawaz	Dr. Josodhir Das
34	Interference of Strip Footings Resting on Level and Sloping Grounds	2019	Girik	Solo
35	Seismic Response of Embankment Dams	2021	Deepika Varun	Solo
36	Dynamic Response of Retaining Wall	2021	Pankaj Panchal	Solo
37	Accounting Uncertainties in Ground Response Analysis	2021	Prem Singh	Solo
38	Numerical Simulation of Randomly Distributed Fiber Reinforced Soil Specimens	2022	Karne S. Kumar	Solo
39	Role of Hydro-Dynamic Forces on the Seismic Response of Dams	2022	Dhananjay Vyas	Solo
40	Role of Embedded Pile Foundation on Seismic Ground Response	2022	Shashank Pandey	Solo
41	Seismic Response of Stepped Retaining Wall	2022	Sumit Bansal	Solo

Organization of Workshops, Conferences and Special Lectures

- Served as **Organizing Secretary** to **7th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (ICRAGEE),** which was supposed to be held offline during July 13-16, 2020. Due to the covid-19 outbreak, the conference was postponed and conducted online during July 12-15, 2021, through an exclusively developed online platform. The conference was jointly organized by the Department of Earthquake Engineering, IIT Roorkee and IISc Bangalore. It is the first of its kind online interactive conference conducted in the area of Geotechnical Earthquake Engineering. Over 30 keynotes were delivered by luminaries from outside India, while over 20 were delivered by the Indian fraternity. 1100 plus delegates were registered for the conference. Conference proceedings were published as Springer book volumes. The Keynote Volume garnered more than 12,000+ downloads within 6months of its publication.

- Co-organized monthly Geotechnical Earthquake Engineering Webinar Series during Dec. 2021 to Dec. 2022.

- Conducted a one-day hybrid (both offline and online) workshop in the honor of Late Prof. DK Paul on the day of his death anniversary, 27th Dec. 2021.

- **As a secretary, ISET, I have organized a series of 10 ISET webinars** by eminent personalities in the field of earthquake engineering **during the covid-19 lock down period.** The webinar series received a huge response from different quarters of the scientific community. More than 5000 participants have taken part in the webinar series. **Through the registration fee**, we **contributed about five lakh of rupees to PMCARES fund.**

- Organized a **2-day short-term** course on "Geotechnical Earthquake Engineering" during 17-18 June 2019 for CWC Engineers under the DRIP program

- Organized a **3 day short-term course** on "Seismic Safety of Earth and Rockfill Dams" during 19-21 June 2019 for CWC Engineers under the DRIP program

- Served as **Organizing Secretary** for **2-Day National Workshop** on 'Assessment & Mitigation of Liquefaction Hazards for Seismic Microzonation', held during 27-28 November, 2015. Workshop received very good response from both industry and academia. Over 80 delegates from different parts of the country have attended the workshop. Fourteen eminent personalities from different IITs including Prof. Shamsher Prakash, Dr. VM Sharma, Director AIMIL, Prof. Boominathan, IITM, Prof. Chandan Ghosh, NiDM have delivered key note lectures in the field of Geotechnical Earthquake Engineering on the state of art practices as well as latest developments on various aspects of liquefaction. It is widely covered in social and press media including TOI.

- **Conducted 1-Day QIP Workshop**, titled 'Challenges in Seismic Site Characterization and Solutions through Recent Developments' on 10th December, 2014. Participants over 40 in number have attended the workshop. Prof. Shamshar Prakash, Prof. TG Sitaram and faculty from Earthquake Engg. Dept., IITR have addressed the participants.

- Arranged several guest lectures by eminent personalities under ISET Rookee Chapter and Dept. of Earthquake Engg., IIT Roorkee.

Lectures Delivered:

- Delivered a theme lecture at Indian Geotechnical Conference in 2021.
- Delivered a keynote lecture at International Conference on "Recent Advances in Geotechnics - EGCON-2021".
- Delivered 12th ISET Webinar on "Influence of Local Soil Conditions on Seismic Site Response and the Challenges involved in their Estimation", conducted by NIT Rourkela online on 18th September, 2020.

- Delivered a guest lecture at IIT Guwahati on “Role of Geotechnical Engineering in Risk Targeted Seismic Designing of Structures”, 25th February, 2020.

- Delivered a lecture on "Geotechnical Aspects in the Seismic Designing of Structures "at 5Day Short-Term Course on "Risk Targeted Seismic Design", Feb. 18-22, 2020.

- Lecture titled, Earthquake Resistant Design of Shallow Foundations: Latest Developments, at a National Workshop, NIT Trichy, 7-8 June, 2019

- Lecture in short-term course Vibration Mitigation Systems Analysis and Design

- Co-chaired a session at - 16th Symposium on Earthquake Engineering 16SEE, IIT Roorkee,20-22 December, 2018

- Chaired a session at Indian Geotechnical Conference IGC 2018, IISc Bangalore, India13-15 December, 2018

- Stayed two months at Georgia Tech., Atlanta, USA for a mutual research collaboration, Georgia Tech., Atlanta, USA, June – July, 2018

- Invited Lecture at workshop on A New Perspective on Natural Hazard, Risk & Insurance, IIT Roorkee, May 02, 2018

- Involved in the organization of ISET golden jubilee symposium as well as 15th Earthquake Engineering Symposium.

- Served as advisory committee member for several conferences.
- Delivered several lectures in various short term courses organized by the department.

- Delivered an **invited talk** on ‘Liquefaction of Soils’, during **UK-India Workshop(**UKIERI) on ‘Seismic Requalification of Pile Supported Structures (SRPSS 2015)’, 7-9th January 2015, IIT Guwahati, Guwahati, India.

- Delivered an **invited lecture** on ‘Uncertainties in Site Characterization using Surface Wave Methods and their Consequences over Seismic Site Response’, at AOGS 14th Annual Meeting, Singapore, 6 – 11 August, 2017.

- Delivered special lectures in various engineering colleges on earthquake hazards.

TEACHING EXPERIENCE

At Undergraduate Level: Foundation Engineering (CE 302) and Elements of Earthquake Engineering (CE 404) at NIT Jalandhar.

At Postgraduate Level: Foundation Engineering (CE 204) at CiSTUP/IISc.

Teaching Engagements@ IIT R:

- Spring Semester:

  EQN-524-Earthquake Resistant Design of Foundations (3L-1T-0P)

  EQN-572-Machine Foundations (3L-1T-2P)

  EQN-576 Seismic Slope Stability: Earthen Dams & Retaining Walls

- Autumn Semester:

  EQN-521-Geotechnical Earthquake Engineering (3L-1T-0P)

  EQN-571-Ground Improvement Techniques (3L-1T-0P)

  DMN-502-Natural Hazards and Impact Assessment (3L-1T-0P)

MEMBERSHIP OF TECHNICAL SOCIETIES

Member	ISSMGE (International Society for Soil Mechanics and Geotechnical Engineering)
Member - Life	ISET (Indian Society for Earthquake Technology)
Member - Life	IGS (Indian Geotechnical Society) IGS EC member ISET Secretary Soil Dynamics Forum Secretary

Major Contributions of Dr. Ravi Sankar Jakka

Dr. Ravi Sankar Jakka has contributions in various fields of Geotechnical and Earthquake Engineering. He is currently serving as one of the Editor in Chief for two internationally reputed journals: International Journal of Geotechnical Earthquake Engineering & ISET Journal of Earthquake Technology. He served as Secretary to Indian Society of Earthquake Technology (ISET) for two terms between 2017-21 and contributed immensely for the growth and

development of ISET. He was instrumental in the establishment of Soil Dynamics Forum within the ISET. Digitized all the older ISET journal volumes and other documents, and made them available over the ISET website. ISET website has been upgraded and online membership services have been introduced. He was fully involved and worked hard for the bidding of 18th World Conference in Earthquake Engineering. He organized prestigious 7th International Conference on Recent Advances in Geotechnical Earthquake Engineering (7ICRAGEE) in 2021.

Dr. Jakka made significant research contributions in the field of Geotechnical Earthquake Engineering. He was involved in the preparation of national level technical document, "Geotechnical/geophysical investigations for seismic microzonation studies of urban centres in India" for NDMA and currently serving as an MoES expert committee member to look after the seismic microzonation studies of 30 major cities in India. He has published over 100 articles in reputed international journals and conferences. During his doctorate, he carried out extensive investigations on **dynamic soil properties and liquefaction resistance of pond ash** and came up with guidelines on usage of pond ash as geotechnical earth material in high seismic regions. He has supervised over 40 Masters Dissertations and 7 Ph.D. thesis, while he is currently guiding 11 Ph.D. Thesis.

Dr. Jakka has guided first Ph.D. in India on **uncertainties in surface wave methods on geotechnical site characterization**. Though surface wave techniques are widely used, there are very limited studies on uncertainties involved. This study sub-divided various uncertainties, which aids to better quantify individual uncertainty and account their effects on seismic hazard assessment. In another Ph.D. thesis guided, **effect of bedrock on site amplification** was studied and **new classification scheme** was established. The study also suggests type of bedrock to be considered in site amplification studies for an accurate seismic hazard estimation. He is also guiding few Ph.D.s and M.Tech. dissertations on various other aspects of **local site effects** such as **deep soil effects** on **site amplifications** in **Indo-Gangetic basin**, and **development of regional attenuation relationships** considering local site effects**.** He is also guiding Ph.D. and M.Tech. dissertations on various other influential aspects of geotechnical earthquake engg. such as **earthquake resistant design of foundations on sloping grounds**, **post-liquefaction behavior of silty sands, geotechnical hazard assessment of hill slopes**, etc. He along with his research group have come up with a new foundation type, called **inclined skirted foundation**, which helps not only to improve the bearing capacity of underlying soils, but also enhances the lateral load and moment carrying capacities. Extending this concept, his group is developing **Bio-Inspired Skirted Foundation,** which has been applied for a patent. He was instrumental in

the development of the Earthquake Early Warning System for northern India, a prestigious national project. He and his students have been working on local site effects on EEW system. Three patents have also been filled on various aspects of EEW system. Brief details about some of these important research works carried out and ongoing research are outlined below.

Uncertainty in Site Characterization Using surface wave Techniques

Surface wave methods which are increasingly being used in site characterization, suffer from several uncertainties from the time of data acquisition to processing. Uncertainty due to data measurement and inversion may provide several equivalent profiles resulting in comparable approximation of the experimental dispersion curve. Further these equivalent profiles may contribute variable ground motion in seismic ground response analysis. These uncertainties are quantified through numerical and experimental studies. The analysis reflects that equivalent profiles resulting from inversion and data uncertainty of surface wave testing are not equivalent in terms of their seismic site response analysis. Considerable variations are observed in amplification spectra and response spectra.

Role of a-priori in minimizing these uncertainties has also been investigated. Reduction in the uncertainty in site characterization using MASW and subsequent site response analysis(SRA) has been quantified with and without using a-priori for various possible shear wave velocity profiles. With a-priori information, the proper parameterization in inversion, and choice of MRDR curves in SRA is tremendously simplified/constrained, which leads to significant uncertainty reduction.

Post-liquefaction Shear Behavior of Sand-Silt Mixtures

Knowledge of the post-liquefaction stress-strain response of sandy soils is essential to estimate the earthquake-induced settlements as well as to assess the bearing capacity of liquefied soil deposits. A detailed study on the post-liquefaction undrained shear behaviour of sand-silt mixtures is studied. Results showed that the limiting silt content plays a vital role in the strength of the soil under both cyclic and monotonic shear loading. Both the liquefaction resistance and post-liquefaction shear strength of the soils are found to decrease with an increase in the fines content until the limiting silt content, and thereafter they increase. It is also observed that these variations on the liquefaction and post-liquefaction resistance of soils are closely related to the variations in relative density.

Inclined Skirted Foundations on Sloping Grounds

Bearing capacity of foundations is greatly affected by the presence of slopes. Further, hilly regions in northern India are vulnerable to earthquake activity, which further degrades the performance of the conventional foundations. In this study, inclined skirted foundations have been proposed as an alternative to conventional foundations. Various aspects related to design and construction of the inclined as well as vertical skirted foundations on slopes is examined through numerical and experimental studies. From the study, it is found that provision of inclined skirts not only increases the bearing capacity but also enhances the lateral load and moment carrying capacities.

Bio-Inspired Skirted Foundations

Though inclined skirted foundation enhances bearing capacity of a shallow foundation tremendously, there are some practical difficulties in the installation of inclined skirts. This problem has been addressed by proposing an innovative Bio-inspired foundation based on the principle of Biogeotechniques. In this new type of foundation, closely spaced micropiles are being used to mimic the tree root system, and thereby they holds the soil together and enhance the bearing capacity of the footing much similar to skirted foundation. A patent has been filled on this new type of foundation. Experimental and field studies are currently going on.

Liquefaction Resistance and Dynamic Properties of Coal Ash

Utilizing ash in large earthworks for geotechnical applications minimizes ash disposal problems. Construction of geotechnical structures with ash particularly in earthquake-prone regions requires knowledge of dynamic behaviour of these materials. A comprehensive study has been carried out to characterize liquefaction behaviour and dynamic properties of coal ash materials from inflow (coarse ash) and outflow points (fine ash), through various laboratory and field tests. Coarse ash exhibited higher static strengths than Yamuna sand in both loose and dense states, while their cyclic/liquefaction strengths are comparable. Fine ash exhibited significantly lower cyclic strengths in both dense and loose states as compared to inflow samples as well as Yamuna sand, even though its static strengths are comparable with Yamuna sand. Low liquefaction resistance of ash deposits is estimated in the field from the shear wave velocities measured using SASW and crosshole tests, and also from N values. The shear wave velocities

measured on slurry deposited ash (in ash ponds) are observed significantly lower compared to the velocities of natural soil deposits, due to low density of the slurry deposited material and the special nature of ash particles containing intra-particle voids. Based on the study, it is found that the coarse ash from ash ponds is suitable to use in geotechnical earthworks in high seismic regions, while use of fine ash require special precautions as they are vulnerable to liquefaction. It is very important to ensure proper compaction in case of fine ash as their liquefaction resistance decreases substantially with decrease in density.

Effective Utilization of Bagasse, an Agricultural Waste as a Potential Soil Reinforcement

Bagasse is a widely produced agricultural waste in India as well as around the world. Although bagasse is being used in various engineering and non-engineering applications, its utilization is still very sparse. The effective, efficient and mass utilization of bagasse-fiber and bagasse-ash in civil engineering is possible in the following four major applications/areas: (i) Bagasse as a Natural Soil Reinforcement to enhance soil strength, (ii) Bagasse as a Filler Material to conserve natural soils, (iii) Bagasse Ash as Geomaterial for effective and gainful utilization of large quantities, and (iv) Bagasse Ash in the Stabilization of problematic soils.

Application of natural fibres as a soil reinforcement cannot be considered as a long-term solution as they will degrade with time. Past studies carried out on the natural reinforcements didn't focus much on this issue. The application of some coating or treatment is rarely studied. This leads to the need of a sustainable solution to improve the durability of naturally reinforced geomaterial. Research on the efficiency of natural fibres particularly bagasse (which are rich in carbon content) as a carbon source for the process of Microbially Induced Calcite Precipitation (MICP) is also currently going on. In MICP, bacteria with specific properties (denitrifying or ureolytic bacteria) convert this carbon-rich reinforcement into insoluble calcium carbonate, such that the voids created during the degradation of reinforcement will be filled with calcium carbonate. This will transform the degradation of natural fibre into a cementitious product and thereby compensate loss of reinforcing effect due to degradation. Laboratory studies are currently going on. A patent has also been applied on this.

Quake-Catcher Network (QCN)

The Quake-Catcher Network (QCN) is a seismic network that implements distributed/volunteer computing with the potential to provide critical earthquake information by filling in the gaps between traditional seismic stations. Microelectromechanical systems

(MEMS) sensors detect vibrations within the frequency range of local seismic waves (0.1–20 Hz), so any internet-connected computer with an internal or external MEMS accelerometer can become a strong-motion seismic station. The QCN, a distributed computing project, uses idle computer cycles and MEMS sensors to increase the number of seismic stations, which may soon provide faster and more accurate detection and characterization of moderate to large earthquakes. (For more information, please refer to http://qcn.stanford.edu/)

He was involved in the implementation and subsequent testing of various triggering algorithms for QCN in Fortran, C and Matlab; He was also involved in managing the trigger database using MySQL and PHP. He had analyzed the triggering analysis of different earthquakes measured by laptop MEMS accelerometers during early testing of the QCN system. He had developed a new formulation in isochrone back projection to quickly arrive at the source characterization (slip distribution as well as their magnitudes) using near-source ground motions. The QCN, with the potential for thousands to hundreds of thousands of sensors, can be able to provide large number of near-source strong motion data that is required for the early source characterization using back projection method.

SOFTWARE SKILLS

- TWODAN – Used in the Design of Dewatering System for Delhi Metro.
- ABAQUS – Used in Masters project work for modelling level ground response.
- SHAKE2000, used for ground response analysis of Kandla Port.
- QUAKE/W – Used for identifying zones of liquefaction of coal ash embankment for evaluating its seismic stability. And also used in a consultancy project for dynamic stress analysis of Salma dam.
- SLOPE/W – Used for evaluating permanent deformations and post-seismic stability of coal ash embankment. And also used for Static and Pseudo-static stability analysis of Salma Dam and for several other projects.
- General purpose software programs: Matlab, C, VB, FOTRAN77
- MySQL – Used to manage QCN database
- Also familiar with different common civil engineering software packages such as STAAD Pro and drawing software such as AutoCAD.

Experiences in ***Setting up Laboratory Equipment****:*

- Setting up Foundation Engineering Laboratory
- Design and setting up of laminar box along with shake table.
- Worked with Heico in developing a combined large size cyclic triaxial and shake table testing facility
- Setting up the Digital Pneumatic Triaxial Testing setup.
- Setting up the Cyclic Triaxial Testing setup.

- Setting up the Spectral Analysis of Surface Waves (SASW) system.
- Installation of Flexible Wall Permeameter set up.

PERSONAL PROFILE

Date of Birth	: 1st August, 1979
Gender	: Male
Marital Status	: Married
Children	: One
Nationality	: Indian
Languages Known	: English, Hindi and Telugu
Address for Communication	: Earthquake Engg. Dept., IIT Roorkee - 247667
Favourite Pursuits	: Reading books, listening to devotional music, playing indoor games like chess, etc..
Strengths	: Good logical thinking, patience to work till completion, Self-confidence and positive thinking.

REFEREES

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2 Prof. T.G. Sitharam, Chairman, Centre for infrastructure and Sustainable Transportation & Urban Planning (CiSTUP), IISc , Bangalore, India, PIN – 560012. E-mail: sitharam@civil.iisc.ernet.in**;** proftgs@gmail.com; Phone: 91-080-23468207, 91-080-2293 2521; Fax: 91-80-2346 8207.

3 Prof. Boominathan, Civil Engg. Dept., IIT Madrass, Chennai, India, PIN – 600036. E-mail: boomi@iitm.ac.in; Phone: +91 (44) 2257 4273.

I hereby declare that all the information provided by me in this resume is true to the best of my knowledge and I accept the responsibility for any misrepresentation.

- Dr. Ravi S. Jakka