PAVAN KUMAR EMANI

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Education

S. No	Degree	Year	Institute	Specialization
1	SSC	1995	Board of Secondary Education, AP	Maths + Science + Social+ 3 language
2	10+2	1997	Board of Intermediate Education, AP	Maths+Phy+Chem -
3	B. Tech	2001	Bapatla Engg. College, Nagarjuna University	Civil Engg.-
4	Graduation in Nuclear Science and Engineering	2002	BARC Training School, Mumbai	Civil Engg. in Nuclear Industry
5	Ph. D	2009	Indian Institute of Technology, Roorkee	Earthquake Engineering

Professional Experience

	Date (from-to)	Designation	Organization
1	16-02-2023 To Till Date	Professor	Siddaganga Institute of Technolog
2	01-11-2015 To 13-02-2023	Professor	Graphic Era (Deemed to be University)
3	09-01-2012 To 31-10-2015	Assoc. Prof.	Graphic Era (Deemed to be University)
4	19-08-2011 To 31-12-2011	Assoc. Prof.	College of Engineering Roorkee (COER)
5	01-05-2009 To 18-08-2011	Asst. Prof.	College of Engineering Roorkee (COER)
6	20-02-2009 To 30-04-2009	Sr. Lecturer	College of Engineering Roorkee (COER)

7	01-09-2004 To 02-09-2005	SO- D	Bhabha Atomic Research Centre (BARC)
8	01-09-2002 To 31-08-2004	SO-C	Bhabha Atomic Research Centre (BARC)

Positions held

(Please give details of any administrative posts, co Ordinator roles/ responsibilities held)

Affiliations of Professional organizations

- Life Member, Indian Society of Earthquake Technology (**ISET**), LM-1361
- Life Member, Indian Concrete Institute (**ICI**), LM- 11607
- Fellow & Chartered Engineer, The Institute of Engineers India (**IEI**), F-1269808
- Life Member, Indian Geotechnical Society (**IGS**), LM-5665

Awards and Honors

- **Distinguished Faculty Award**, Uttarakhand State Council of Science & Technology, 2022
- **Outstanding Researcher** for 2015-2018 for active contribution in Research by Graphic Era Deemed to be University
- **Research Excellence Award** 2015 for best research output by Graphic Era Deemed to be University
- **ISET B. K. Maheswari Award 2014** for Best Ph. D Thesis in Soil-Structure Interaction in India
- **Homi Bhabha Award** in Civil Engineering 2002 from BARC training school
- AIR-34 (GATE 2001), AIR-103 (GATE 2005)
- Nagarjuna University (AP) **silver medal** in Civil Engineering 2001
- **Gold medal for excellence in civil engineering 2001** by Bapatla Engg. College, Andhra Pradesh

Courses Taught

Undergraduate Courses

- Engineering Mechanics
- Strength of Materials
- Structural Analysis - I
- Structural Analysis - II
- Reinforced Concrete Design- I &II

- Bridge Engineering
- Design of Steel structures
- Earthquake Resistant Design of Buildings
- Theory of Elasticity
- Introduction to Civil Engineering
- Analysis of Indeterminate Structures

Postgraduate Courses

- Finite Element Method
- Advanced Concrete Structures
- Advanced Steel design
- Computer Aided Analysis (Theory and Lab)
- Soil- Structure Interaction
- Earthquake Resistance Design of Buildings and Dynamics of Structures
- Theory of plates and shells
- Stability analysis of structures
- Structural Design Lab
- Structural Dynamics

Research Guidance

S. no	Name of the Scholar	Title	Year of completion
1	Patchamatla JanakiRama Raju	Stability Of High Speed Railway Track Embankment Under Coupled Vibration & Pore Pressure Conditions	2024

Research Areas

- Structural Engineering: Health monitoring, seismic analysis & design, Dynamics
- Geotechnical Engineering: Numerical modeling of Soil Structure Interaction
- Educational research: Objective Outcome Based Educational methods

Sponsored Projects

Ongoing Projects:

1. Title:
   Funding Agency:
   Amount:
   Duration:
   Role:

Completed Projects:

1. Title: Development of inelastic design curves for the seismic design of pile foundations

Funding Agency: DST-SERB (Young Scientist Award)
No.SR/FTP/ETA-130/2010
Amount: 9.01 Lakh
Duration: 2012-2015
Role: Principal Investigator (PI)

2. Title: Seismic behavior of Large pile groups in liquefying soil conditions
Funding Agency: Board of Research in Nuclear Sciences (BRNS)
2012/36/49/BRNS- 2977
Amount: 24.35 Lakhs
Duration: 2013-2017
Role: Principal Investigator (PI)

Publications

Journals

- D Prasad, D. R. P., Siddesha, H., Emani, P. K., & Sharma, H. D. (2024). Machine Learning Regression and Optimal Neural Network Models for Prediction of Compressive Strength of High Strength Self-Compacting Concrete-A Comparative Study.

- JRR Patchamatla, Pavan Kumar Emani, Ritesh Kumar, (2024) Dynamic Axle Load Effects on High-speed Railway Embankment: Pore Pressure and Deformation in Varied Subsoils, Geotechnical and Geological Engineering, 42, 3561–3578. Springer, Q1, https://doi.org/10.1007/s10706-024-02744-1, ISSN 0960-3182

- Pramod Tiwari, Kranti Jain, Pavan Kumar Emani (2023). Non-linear analysis for CFRP wrapped steel box sections under bi-axial load. Structures and Buildings, 177(8), 682-698 https://doi.org/10.1680/jstbu.22.00161(Impact Factor 1.533 (two year); 1.428 (five year); SJR 0.41) ISSN: 0965-0911, Q3

- Purohit, V., Emani, P. K. (2022). Discrete and Continuum Modeling of Coulomb Friction Damping in Stone Blocks, Journal of Graphic Era University (JGEU), 10(2), 181-194. doi: 10.13052/jgeu0975-1416.1027, River Publisher, ISSN: 0975-1416 (Print Version) 2456-4281 (Online), https://www.journal.riverpublishers.com/index.php/JGEU/article/view/3271.

- Patchamatla, J. R. R. & Emani, P. K (2022). Time Domain Implementation of Consistent Boundaries for Continuum Two-Dimensional Wave Propagation Problems Using ABAQUS User-Defined Elements. International Journal of Mathematical,

Engineering and Management Sciences, 7(2), 196-210. https://doi.org/10.33889/IJMEMS.2022.7.2.013., ISSN: 2455-7749

- P. K. Emani, V. Purohit (2020). Predictive analysis of compressive strength by using linear regression model in python, International Journal of Advanced Research in Engineering and Technology, 11(9), 1091-1097. DOI: 10.34218/IJARET.11.9.2020.108, ISSN: 2394 – 6814

- Purohit, V., Emani, P. K. (2020). Monitoring of an overhang beam by using strain gauge and LVDT, International Journal of Advanced Research in Engineering and Technology (IJARET), 11(5), 772-779. DOI: https://doi.org/10.34218/IJARET.11.5.2020.081, ISSN Print: 0976-6480, https://iaeme.com/MasterAdmin/Journal_uploads/IJARET/VOLUME_11_ISSUE_5/IJARET_11_05_081.pdf

- Purohit, V., Emani, P. K., and Patchmatla, J. RamaRaju (2019) FEM Analysis Of Corbel Arch And Drum Column Masonry In Abaqus, Journal of Critical Reviews, ISSN- 2394-5125, 6(4),140-148. http://www.jcreview.com/fulltext/197-1614176542.pdf?1614781334

- Patchamatla, J. R. R. and Emani, P. K. (2019). Time Domain Implementation of transmitting Boundaries in ABAQUS for Discrete Soil-structure Interaction Systems, *International Journal of Mathematical, Engineering and Managerial Sciences (IJMEMS),* 5(3), 447-462. ISSN: 2455-7749 https://doi.org/10.33889/IJMEMS.2020.5.3.037, ISSN: 2455-7749

- Emani, P., Kothari, S., Phanikanth, V. (2018). Collapse Load Analysis of Reinforced Concrete Pile Group in Liquefying Soils under Lateral Loading. *International Journal of Geotechnical and Geological Engineering*, World Academy of Science, Engineering and Technology, International Science Index 134, 12(2), 114 - 117. http://scholar.waset.org/1307-6892/10008595.https://doi.org/10.5281/zenodo.1315869

- Emani, P. K. and Kothari, S. (2017). “Study of Pure Torsion in Open Thin Walled Sections using Finite Element Analysis”. Journal of Graphic Era University, 5(2), 140-146,ISSN: 0975-1416 (print), 2456-4281 (online) http://www.geujournals.com/assets/8-jgeu-16-029- emani-v52-1401462.pdf

- Emani, P. K., Kumar, R., & Phanikant, V. S. (2016). Inelastic Response Spectrum for Seismic Soil Pile Structure Interaction. *International Journal of Geotechnical*

Earthquake Engineering (IJGEE), *7*(2), 24-34. 10.4EE.2016070018/IJG102, ISSN: 1947-8488, |EISSN: 1947-8496

- Maheshwari B.K. and Emani P.K. (2014), “Three Dimensional Nonlinear Seismic Analysis of Pile Groups using FE-CIFECM coupling in Hybrid Domain and HiSS Plasticity Model", *International Journal of Geomechanics*, 15(3), DOI:10.1061/(ASCE)GM.1943-5622.0000335**,** ASCE. ISSN: 1532-3641 EIISN: 1943-5622

- Lute, V., Emani, P. K. and Rao, V. (2011) “Effect of deck-pylon connection in extradosed bridges”, *Journal of Recent trends in Civil Engineering and Technology*, 1(2),1-8. *eISSN: 2249–8753, ISSN: 2321-6476*

- Emani, P. K. and Maheshwari, B. K. (2010) “Effectiveness of hybrid methods in analyzing frequency-dependent systems with limited nonlinearity.” *International Journal for Advanced Computing (IJAC)*, 2(2), 60-67.ISSN: 0975-7686

- Emani, P.K. and Maheshwari, B.K. (2009) “Dynamic impedances of pile groups with embedded caps in homogeneous elastic soils using CIFECM”, *Soil Dynamics and Earthquake Engineering,* Elsevier, 29(6), 963-973, https://doi.org/10.1016/j.soildyn.2008.11.003., 0267-7261, eISSN: 1879-341X

Conference Proceedings

- Shivu K, Pavan T C, Emani P K and VenkataLakshmi G V. (2025). “Serviceability analysis of 3-Storey Antenna Tower structure under operational wind load combinations.” Accepted for publication in Conference Proceedings of 14th Structural Engineering Convention (SEC-2024) organized by NIT Tirichirapalli on 12-14 December 2024.

- Mohan Swamy, Pavan K. Emani (2023). “Seismic stress-deformation analysis of HSR embankment under saturated pore pressure conditions.”, Accepted for publication in International Conference on Modern Trends in Civil Engineering Infrastructure Development and Management (MTCEIDM) 2023, Dec 2023, Bangalore

- Hanumanthappa, S., Sinchana, A. S., & Emani, P. K. (2024). Structural Damage Detection in Double-Tapered Steel Beam Using Modal Strain Energy Method. In International Conference on Sustainable Infrastructure: Innovation, Opportunities and Challenges (pp. 23-33). Singapore: Springer Nature Singapore.

- Emani. P. K., Rahul Vaishnava, Shashank Kothari (2024). “Graphical Method for solution of differential equation of plate bending problems”, International Conference on Advances in Civil Engineering 2022' (ICACE 2022), AIP conference Proceedings, 20–22 December 2022, Chandwad, India. https://doi.org/10.1063/5.0193954. View pdf

- Nainwal, A., Emani, P. K., Shah, M. C., & Negi, A. (2022, November). Analysis of seismic forces at different floor levels of G+ 9 multi-storey OMRF building using STAAD Pro. In AIP Conference Proceedings (Vol. 2481, No. 1, p. 020031). AIP Publishing LLC, INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN ENGINEERING AND SCIENCES (ICAES2021).01-02 July 2021, Dehradun, UK https://doi.org/10.1063/12.0012009

- Nainwal, A., Emani, P. K., Shah, M. C., Negi, A., Kumar, V., & Negi, P. (2021). The influence of Metakaolin on the copper slag substituted concrete with the fine aggregate of Beas river. International Conference on Technological Advancements in Material Science and Manufacturing, Materials Today: Proceedings, 46, 10425-10432. https://doi.org/10.1016/j.matpr.2020.12.981, 19-20 Feb, 2021, Dehradun, UK

- Nainwal, A., Negi, P., Emani, P. K., Shah, M. C., Negi, A., & Kumar, V. (2021). An experimental investigation to substitute copper slag in concrete with Beas river fine aggregate. International Conference on Technological Advancements in Material Science and Manufacturing, Materials Today: Proceedings, 46, 10339-10343. https://doi.org/10.1016/j.matpr.2020.12.481

- Patchamatla, J. R. R., Emani, P. K., Kothari, S. (2019) “2D Coupled Poro-Elastic Analysis for Dynamic Behaviour of CPRF”, Proceedings of International Association for Computer Methods and Advances in Geomechanics (IACMAG) , March 4-6, IIT Gandhinagar, India.

- Patchamatla, J. R. R., Kandpal, N., Kothari, S., and Emani, P. K. (2018). “Time domain implementation of silent boundaries for wave propagation analysis in soils”, Proceedings International conference on Mathematical Techniques in Engineering Applications (ICMTEA-2018), December 7-8, 2018, Graphic Era (deemed to be University), Dehradun.

- Emani, P. K., Patchamatla, J. R. R., Kothari, S. and Phani Kanth, V. S. (2018) . "Rayleigh wave effects on Combined Piled Raft Foundation", 16th Symposium of Earthquake Engineering, December 20-22, 2018, IIT Roorkee, India

- Patchamatla, J. R. R. and Emani, P. K. (2018). “Vibration Analysis of High-speed railway track using ABAQUS”, Proceedings of International Conference on advances in construction materials and structures (ACMS-2018), March 7-8, 2018, IIT Roorkee.

- Emani, P. , Kothari, S. , Phanikanth, V. (2018). “Collapse Load Analysis of Reinforced Concrete Pile Group in Liquefying Soils under Lateral Loading”. Proceedings of International Conference on advances in construction materials and structures (ACMS-2018), March 7-8 2018, IIT Roorkee.

- Emani, P. K., Ritesh, K. and PhaniKant, V. S. (2016). “Study of interaction between axial and lateral loading on piles during seismically induced Liquefaction”, 6th International Conference on Recent Advances in Geotechnical Earthquake Engineering (ICRAGEE-2016), August 1-6, 2016 Noida, India.

- Emani, P. K., Kandpal, A. and Vedula, P. K. (2015). "Non-linear Dynamic Lateral Load Analysis of single pile using winkler springs", Proc. National Conference on Research and Innovations in Science and Technology (NCRIET-15), March 28-29, 2015, COER, Roorkee.

- Emani, P. K., Wahane, N. and Tiwari, V. (2014)."Design curves for floating pile groups in Liquefying soils", Indian Geotechnical Conference 2014, December 18-20, 2014, JNTU, Kakinada.

- Emani, P. K. and Vaishnav, P. (2014), "Implementing substructure method of seismic soil-pile interaction using ABAQUS", 15th Symposium on Earthquake Engineering (15SEE), December 11-13, 2014, IIT Roorkee, Roorkee.

- Prabhat Kumar, Ashwani Kumar, Pandey, A. D., Sharma, R. and Emani, P. K. (2014). "Seismic hazard map of Uttarakhand using NGA relationship", 15th Symposium on Earthquake Engineering (15SEE), December 11-13, 2014, IIT Roorkee, Roorkee.

- Emani, P. K., Saxena, P. and Kandpal, A. (2014), "Performance evaluation of MATLAB operations using parallel computing constructs", International Conference on Advances in Computing Communications and Informatics-2014 (ICACCI-2014), COER, Roorkee.

- Aggrawal, S., Arora, R., Emani, P. K. and Mittal, A. (2010). “An efficient parallel processing scheme using hybrid domain algorithm,” Proc. Of 14 Symposium on Earthquake Engineering, December 17-19, 2010, IIT Roorkee, Paper No. A149.

- Emani, P. K. and Maheshwari, B. K. (2010). “Dynamic Pile-Cap-soil-Pile interactions in triangular pile groups,” Proc. of 14th Indian Geotechnical Conference (IGC)- 2010, December 16-18, 2010, IIT Bombay, Paper No. 124, Vol. 2, 961-964.

- Emani, P.K. and Maheshwari, B.K. (2008). “Nonlinear analysis of pile groups using hybrid domain method”, Proc. of 12th International Conference of IACMAG, October 1-6,2008, Goa, India, Paper No. 1590.

- Maheshwari, B. K. and Emani, P. K. (2008). “Effect of nonlinearity on the dynamic behavior of pile groups,” Proc. Of 14th World Conference on Earthquake Engineering (WCEE), October 12-17, 2008, Beijing.

- Emani, P. K and Maheshwari, B. K. (2006). “Evaluation of free-field seismic response of nonlinear soil layers for bridges.” Proc. National Conference on Advances in Bridge Engineering, March 24-25, 2006, IIT Roorkee, Paper No. 24, 279-290.

- Emani, P.K. and Maheshwari, B.K. (2006). “SSI analysis of pile foundation using frequency-time domain hybrid method”, Proc. of the 13th Symposium on Earthquake Engineering, December 18-20, 2006, IIT Roorkee, Roorkee, India.

- Emani, P. K, Bhasha, S. M., Narasimhan, R., Ramanujam, S. and Kulkarni, P. B. (2003). “Seismic retrofitting and strengthening of spherical prestressed concrete water tank”, Proc. Of workshop on Retrofitting of Structures, October 10-11, 2003, Department of Earthquake Engineering, IIT Roorkee.

Book Chapters

- RamaRaju, P.J., Emani, P.K., Kothari, S. (2020). 2D Coupled Poro-Elastic Analysis for Dynamic Behaviour of CPRF. In: Prashant, A., Sachan, A., Desai, C. (eds) *Advances in Computer Methods and Geomechanics . Lecture Notes in Civil Engineering*, vol 56. Springer, Singapore. https://doi.org/10.1007/978-981-15-0890-5_51, 617–623, ISBN: 978-981-15-0889-9, ISBN (online) 978-981-15-0890-5.

- Emani, P. K., Patchamatla, J. R. R., Kothari, S., Kumar, R., & Phanikanth, V. S. (2019). Numerical Simulation of Seismic Interaction of Pile Foundation and Structure. In *Recent Challenges and Advances in Geotechnical Earthquake Engineering* (pp. 141-167). IGI Global.DOI 10.4018/978-1-5225-6948-0.ch006, ISBN13: 9781522569480|ISBN10: 1522569480

Books

- NIL

Editorial

- ATLAS annual magazine of CED, SIT.

Reviewer of Journals

- Reviewer, International Journal of GeoMechanics, ASCE
- Reviewer, Earthquake Engineering and Engineering Vibrations, Springer

Editor/ Reviewer of Journal

- Reviewer, International Journal of GeoMechanics, ASCE
- Reviewer, Earthquake Engineering and Engineering Vibrations, Springer

Patents

- NIL

Invited Lectures, talks and workshops

- Resource person for ATAL FDP session in SIT, Tumkur
- Resource person for MVGCE, Vizianagaram, 4 day training on OPENSEES
- Resource person for GVPCE, Vizag, 09 - 13 Jan 2013, 1- week training on OPENSEES
- Resource Person for Advanced Excel for Civil Engineers, workshop in Graphic Era
- Resource person for GBPIET 2020 on Challenges in SSI
- Key note speaker in NCRIET-2015 HELD AT COER, Roorkee on Mar 28-29, 2015
- Invited talk in GVPEC (Gayatri Vidya Parishad) 11July 2013 on Push Over Analysis