Dhanya J

Curriculum Vitae

Project Associate
Indian Institute of Technology Madras,
Chennai, India
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EDUCATION

Doctor of Philosophy (Ph. D.) [Structural Engineering] 2013-2019
Indian Institute of Technology Madras, Chennai, India

- Secured a **CGPA of 9.00 / 10**

Master of Technology (M. Tech.) [Structural Engineering] 2011-2013
National Institute of Technology-Tiruchirappalli, Tamil Nadu India

- Secured a **CGPA of 9.44 / 10**

Bachelor of Technology (B. Tech.) [Civil Engineering] 2007-2011
College of Engineering Trivandrum, University of Kerala, Kerala, India

- Secured a **CGPA of 8.52 / 10**

RESEARCH INTERESTS

My goal is to make fundamental contributions to the field of Earthquake Engineering. My research interests include *Random field modelling, Ground motion simulations, Data analysis, Hazard analysis and Numerical simulations.*

SCHOLASTIC ACHIEVEMENTS

- Secured IACMAG-2019 **Doctoral Research Award** 2019
- Secured **rank 1 in M. Tech** in Structural Engineering, National Institute of Technology -Tiruchirappalli. 2013
- Secured **rank 4 in B. Tech** in Civil Engineering, University of Kerala. 2011

PUBLICATIONS

Journals: Published

- Jayalakshmi, S., **Dhanya, J.**, Raghukanth S.T.G., and Martin Mai, P.,2021, Hybrid Broadband Ground Motion Simulations in Indo-Gangetic Basin for Great Himalayan Earthquakes, *Bulletin of Earthquake Engineering*. (Accepted)
- **Dhanya, J.**, and Raghukanth S. T.G., (2020), Probabilistic Fling Hazard Map of India and Adjoined Regions, *Journal of Earthquake Engineering*. DOI: https://doi.org/10.1080/13632469.2020.1838969 .
- **Dhanya, J**., and Raghukanth, S.T.G., (2020). Deterministic Tsunami Hazard map for India, *Current Science* 119(10), 1641-1651 .

- **Dhanya, J.**, and Raghukanth, S.T.G., (2020). Implication of source models on tsunami wave simulations for 2004 (Mw 9.2) Sumatra Earthquake, *Natural Hazards*, 104, 279–304 DOI: https://doi.org/10.1007/s11069-020-04168-5.
- Maheshreddy Gade, Partha Sarathi Nayek and **Dhanya, J.**, (2020). A New Neural Network based Prediction Model for Newmark's Sliding Displacements, *Bulletin of Engineering Geology and the Environment* DOI: https://doi.org/10.1007/s10064-020-01923-7.
- **Dhanya, J**., and Raghukanth, S.T.G., (2020). Non-linear Principal Component Analysis of Response Spectra, *Journal of Earthquake Engineering*. DOI:10.1080/13632469.2020.1773352.
- **Dhanya, J.**, and Raghukanth, S.T.G., (2020). A non-stationary random field model for earthquake slip, *Journal of Seismology*, DOI: https://doi.org/10.1007/s10950-019-09899-y.
- **Dhanya, J**., and Raghukanth, S. T. G., (2020). Neural Network based hybrid Ground Motion Prediction Equations for Western Himalayas and North-Eastern India, *Acta Geophysica*, DOI: 10.1007/s11600-019-00395-y.
- Jayalakshmi, S., **Dhanya, J.**, Raghukanth S.T.G., and Martin Mai, P., (2020). 3D Seismic Wave Amplification in the Indo-Gangetic Basin from Spectral Element Simulations, *Soil Dynamics and Earthquake Engineering*, DOI: https://doi.org/10.1016/j.soildyn.2019.105923.
- **Dhanya, J.**, and Raghukanth, S.T.G., (2019). A non-Gaussian random field model for earthquake slip, *Journal of Seismology*, DOI: https://doi.org/10.1007/s10950-019-09840-3.
- **Dhanya, J.**, and Raghukanth, S. T. G., (2018). Ground motion simulation for earthquakes in Sumatran region. *Current Science*, 114(8), 1709-1720.
- Sangeetha, S., **Dhanya, J**. and Raghukanth, S.T.G., (2018). 3D Crustal Velocity Model for Ground Motion Simulations in North-East India. *Journal of Earthquake Engineering*, DOI: https://doi.org/10.1080/13632469.2018.1520760.
- **Dhanya, J.**, and Raghukanth, S.T.G., (2018) Ground Motion Prediction Model Using Artificial Neural Network. *Pure and Applied Geophysics*, 1035-1064.
- **Dhanya, J.**, Gade, M., and Raghukanth, S.T.G., (2017). Ground motion estimation during 25th April 2015 Nepal earthquake. *Acta Geodaetica et Geophysica*, 52(1), 69-93.
- Raghukanth, S.T.G., Kavitha, B. and **Dhanya, J.**, (2017). Forecasting of Global Earthquake Energy Time Series. *Advances in Data Science and Adaptive Analysis*, 9(04), 1750008. DOI: https://doi.org/10.1142/S2424922X17500085.
- **Dhanya, J**. and Baskar, K., (2013). Behavioural Analysis of Steel Girders in Skew Bridges, The Bridge & Structural Engineer, *Journal of the Ing-IABSE*, 43(2), 51-74.

Journals: Under Review

- **Dhanya, J.**, Sreejaya K. P., and Raghukanth S. T.G., Seismicity Parameters for India and Adjoined Regions , *Journal of Seismology*.

Conferences:

- **Dhanya, J.**, Jayalakshmi, S., and Raghukanth S.T.G., Broadband Ground Motion in Indo-Gangetic basin for Hypothetical earthquakes in Himalayas, International Congress on Computational Mechanics and Simulation (ICCMS 2019), Indian Institute of Technology Mandi (IIT Mandi), Mandi, December 11-13, 2019.
- Sreejaya, K. P., **Dhanya, J.**, and Raghukanth S.T.G., A 3D Finite Element Model for Ground motion simulations in Peninsular India , XV Vibration Engineering and Technology of Machinery (VETOMAC 2019), Curibia, Brazil, November 10-15, 2019.
- **Dhanya, J.**, Seismic Wave Amplification in the Indo-Gangetic Basin for possible large earthquakes, International Association for Computer Methods and Advances in Geomechanics (IACMAG-2019) Symposium, Indian Institute of Technology Gandhinagar (IITGN), Gujarat,

March 4-7, 2019.

- Jayalakshmi, S., **Dhanya, J.**, Raghukanth S.T.G., and Martin Mai, P., Finite Element Modelling of the Indo-Gangetic Basin to Study Site Amplification, Poster no: S31B-0871, AGU fall meeting, New Orleans, December 11-15, 2017.
- **Dhanya, J**., Dwijesh Sagar., and S.T.G. Raghukanth, Predictive Model for Ground Motion Param eters using Artificial Neural Network (SEC-378), 10th Structural Engineering Convention, Chennai, India, December 21-23, 2016.
- Dhabu, A., **Dhanya, J**. and Raghukanth, S.T.G., 2019. Effect of Topography on Earthquake Ground Motions (SEC-379). 10th Structural Engineering Convention, Chennai, India, December 21-23, 2016.
- **Dhanya, J.**, Muthuganeisan, P., and S.T.G. Raghukanth, Probablistic fling hazard map for Himalayan Region, The 5th International Conference on Civil Engineering and Urban Planning (CEUP2016), Xian, China, August 23-26, 2016.
- **Dhanya, J**. and Baskar, K., Displacement and distribution of moments in steel skew highway bridge girders, National Conference Keynote-2013, CARE Group of Institutions, Tiruchirappalli, India, February 7-8, 2013.
- Ashraf, A., Arya, S., **Dhanya, J.**, Mariamma, J., Meera, V., and Veena, M.,. Soil Stabilization using Raw Plastic Bottles. In Proceedings of Indian Geotechnical Conference (IGC-2011), pp. 15-17, December 15-17, 2011.

RESEARCH INVESTIGATIONS

- **Engineering Models for Earthquake Slip field and Indo Gangetic Basin** 2013-2019
  Guide: Prof. S. T. G. Raghukanth (PH. D. THESIS)
  - Developing random field models that accounts for **non-Gaussianity and non-Stationarity** of earthquake slip fields.
  - 3D regional finite element **model for Indo Gangetic basin** to quantify basin amplifications.
  - **Neural Network** based algorithms to interpret and predict ground motion parameters and subsequent hazard estimations.
  - **Deterministic tsunami** hazard and **Probabilistic fling** hazard maps for India.
- **Analysis and damage assessment of Skew Bridges** 2012-2013
  Guide: Dr. K. Baskar (M. TECH. THESIS)
  - **Nonlinear and dynamic load analysis of skew bridges** for varied orientation based on numerical modeling using ABAQUS
  - **Performance evaluation and identification** of damaged bridges.
- **Soil Stabilization using Raw Plastic Bottles** 2010-2011
  Guide: Dr. Mariamma Joseph (BACHELOR'S THESIS)
  - **Experimental investigation** on the use of raw plastic bottles as soil stabilization component.
  - **Parametric study** to identify the optimum quantity, placement, and orientation of bottles that minimizes settlement.

PROFESSIONAL EXPERIENCE

- **Project Officer/Associate**, *IIT Madras, Chennai* 2013-2021
  - Raghukanth, S. T. G., Dhanya, J., and Sreejaya, K. P., 2020, **Probabilistic Seismic Hazard Map of India** (RB1920CE465NDMA008344)

- Raghukanth, S. T. G., Dhanya, J., and Sreejaya, K. P., 2018, **Spatial Variation of Ground Motion for Kalpakkam** (RB1819CIE007IGCASTGR)
- Raghukanth, S. T. G., Anjali Dhabu, and Dhanya, J., 2017, **Vulnerability Assessment Of Health Facilities In Orissa**
- Raghukanth S.T.G., C. V. R. Murthy, Muthuganeisan, P. and Dhanya, J., 2017, **Development of Earthquake Displacement And Velocity Hazard Maps of India**, (CIE1213195DSTXSTGR)

- **Half Time Teaching Assistant**, *IIT Madras*, Chennai 2013-2019
  - Teaching assistant for courses: Experimental Techniques, Probability Methods in Civil Engineering, Advanced Structural Mechanics, Structural Dynamics, Mechanics of Materials, and Structural Analysis. Involved in monitoring experimental procedure, tutorial preparation and correction of corresponding submissions.
- **Half Time Teaching Assistant**, *NIT Trichy*, Tiruchirappalli 2011-2013
  - Teaching assistant and co-ordinations for courses: CAD lab, Structural and Concrete Technology Lab, and Engineering Graphics. Involved in monitoring the assignments during lab hours and correction of records.

PROFESSIONAL SERVICES

- **Representative of M. Tech Structural Engineering** 2011-2013
  - Batch representative in different committees.
- **Representative of B. Tech Civil Engineering** 2007-2011
  - Elected as Class Representative in College of Engineering Trivandrum for more than four semesters. Member of several programme organizing committee.

SKILLS

Software: ABAQUS ®, MATLAB®, STAAD ®, LaTeX®, AutoCAD®, SPECFEM, GEOCLAW, GMT, CRISIS

Programming Languages: BASIC, C, C++, FORTRAN, Python

Linguistics: English, Malayalam, Tamil, Hindi.