BHARGAVI PODILI

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RESEARCH INTERESTS

Structural engineering, Earthquake engineering and engineering seismology; particularly in ground motion prediction, site characterization, probabilistic seismic hazard analysis, strong ground motions and their impact on structures

EDUCATION

Indian Institute of Technology Madras, Chennai (Aug '20 – Present)
Doctor of Philosophy in Civil Engineering (Major: Structural Engg.) | GPA: 9.3/10

Indian Institute of Technology Madras, Chennai (July '13 – Oct '16)
Master of Science in Civil Engineering (Major: Structural Engg.) | GPA: 8.94/10
Thesis: Rating of ground motion records

Visvesvaraya National Institute of Technology, Nagpur (July '09 – May '13)
Bachelor of Technology in Civil Engineering | GPA: 8.66/10
Thesis: Design and Analysis of Multi-storied buildings

SKILL SET

- Courses: Seismology and hazard assessment | Advanced structural dynamics | Advanced mechanics of structures | Applied time series | Finite element analysis | Numerical analysis of differential equations
- Proficient in Data Analysis platforms such as Matlab, Python and R
- Experienced in Structural Analysis software's such as SAP2000 and STAAD Pro
- Experienced in working with Abaqus(FEM), SPECFEM, AutoCAD, ArcGIS and MS Office

PUBLICATIONS

- Bhargavi Podili and Raghukanth S.T.G. (2019), **Ground Motion Parameters for the 2011 Great Japan Tohoku earthquake**, *Journal of Earthquake Engineering 23(4), 688-723*
- Bhargavi Podili and Raghukanth S.T.G. (2019), **Rating damage potential of ground motion records**, *Earthquake Engineering and Engineering vibration 18(2), 233-254*
- Bhargavi Podili and Raghukanth S.T.G. (2019), **Ground motion prediction equations for higher order parameters**, *Soil Dynamics and Earthquake Engineering 118, 98-110*
- Bhargavi Podili and Raghukanth S.T.G. (2019), **Rating of Indian ground motion records**, *Natural Hazards 96(1), 53-95*
- Vemula, S., Yellapragada, M., Podili, B., Raghukanth, S.T.G., Ponnalagu, A. (2021), **Ground Motion Intensity measures for New Zealand**, *Soil Dynamics and Earthquake Engineering 118, 98-110*
- Bhargavi Podili, Sreejaya K. P., Raghukanth S. T. G., Srinagesh D. and Murty C. V. R., **A Vertical-to-Horizontal Spectral Ratio Model for India**, Soil Dynamics and Earthquake Engineering. (*Under first minor revision*)

RESEARCH EXPERIENCE

Current work (Aug '20 – Present)

- **V/H spectral acceleration GMPEs for northern India |** Developed a new ground-motion prediction model for vertical-to-horizontal (V/H) spectral acceleration ratio for Western Himalayas and North East India

- **Dimensionality study of ground motions through Nonlinear Principal Component Analysis |** Studied the inter-correlations of the PCs and the influence of the predictor variables such as rupture distance and site class through NLPCA of Fourier amplitude spectra
- **Ground Motion Parameters for the 2015 Nepal Earthquake |** Conducted a comprehensive analysis of the 25th April 2015 Nepal earthquake mainshock and its five major aftershocks and site amplifications are obtained using the HHT-EMD marginal spectra

Independent work **(May '18 – July '20)**

- **Evaluating ground motions of Indian earthquakes |** Rated the Indian ground motion dataset by developing a new parameter, which quantifies its damage potential
- **Stochastic model for non-Gaussian ground motions |** The model is developed through conserving high order moments such as skewness and kurtosis in ground motion estimation

Masters Thesis, '**Rating of Ground Motion Records**' under Prof. Dr. S.T.G Raghukanth **(July '13 - Oct '16)**

- Developed GMPEs for 21 parameters characterizing 115246 ground motion records of Japan (20 year KNet database) with magnitudes ranging from M_w 5.0 to M_w 9.0
- Performed a correlation based grouping of 21 parameters using principal component analysis and developed a novel parameter: Distance from zero-amplitude axis ($d_{Z\text{-}A}$), characterizing multiple features of ground motions derived from a 20 year KNet database
- Studied the 2011 Great Japan Tohoku earthquake using 21 Ground Motion Parameters and derived prediction equations for these 21 parameters for a magnitude specific (Mw 9.0) event

PROFESSIONAL EXPERIENCE

GIS Consultant, TriCAD Design Consulting, Hyderabad **(Dec '16 – Dec '18)**

Performed geotagging through 1:1000 mapping of major Indian metro cities such as Hyderabad, Chennai etc. using high resolution spatial imagery and DGPS survey

Project Associate, Centre for Industrial Consultancy &Sponsored Research, IIT Madras **(Sep '17– Nov '17)**

Performed site-specific seismic study for a BHEL project in Khulna, STPP, Bangladesh, teaming up with Prof. S. T. G. Raghukanth

PROJECTS/INTERNSHIPS

'**Design and analysis of multi-storied buildings'** under Prof. Dr. R.S. Sonparate at VNIT **(July '12 – May '13)**

Detailed structural analysis of a G+12 structure using STAAD Pro. and designed structural elements through customized macros (VB) of STAAD and excel codes

'**Design of an urban road**' at EPMCR, IIT Madras incubated consultancy firm **(June '12 – July '12)**

Performed cost and energy efficient geometric design and prepared Specifications, BoQs; Designed pavement, footpaths, storm-water drains and street lighting

'**Generation of site specific response spectra**' under Prof. Dr. O.R. Jaiswal at VNIT **(Dec '11 – May '12)**

Developed a Python program to generate site specific response spectra, based on a collected dataset of earthquake records coherent to different site characteristics

'**Analysis of Earthquake resistant buildings**' at Earthquake Eng Research Centre, IIIT Hyd **(May '11 - July '11)**

Studied the behavior of various engineering structures during an earthquake (Indian scenario) and adopted a scenario based selection of earthquake resistant design for each structure

ACTIVITIES AND INTERESTS

- Teaching Assistant for courses- Mechanics of materials and Structural Dynamics
- Recipient of 'Dr. P. K. Godbole Prize' for best performance in 'Design of RCC Structures' at VNIT
- Placed second in the project 'Design of Low Cost Housing' during technical fest, Axis 2011 at VNIT
- Placed second for 'Integrated Design of Stadiums' during technical fest, Axis 2010 at VNIT
- Active member of Institute analytics club (coordinator), chess club and music club