# **RAJESH PARLA**

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#### **ABOUT ME**

Enthusiastic individual thriving for research opportunity in the fields of Seismology and Earthquake engineering. Proficiency in earthquake modelling and simulation platforms such as SPECFEM 3D and PyLith. Working experience in data analysis and tools like MATLAB. Open to work and learn any relevant fields of Earthquake engineering, Seismology and Geophysics.

#### **EDUCATION**

Doctor of Philosophy (Civil, Structural Engineering)2018 -2023Joint Ph.D. with Indian Institute of Technology Hyderabad,<br/>and Swinburne University of Technology Melbourne<br/>(Australia).2018 -2023

Dissertation title: "Basin amplification effects on structures: Bridge fragility subjected to subduction earthquakes"

## Projects during Ph.D.

1. Simulation of Mw 7.8 Nepal 2015 earthquake ground motion

Period	: 2019 - 2020
Location	: Indian Institute of Technology Hyderabad
Advisor	: Dr. Surendra Nadh Somala
Description	

## Description

Simulation of ground motion for 2015 Nepal earthquake using state of art parallel processing FEM tool PyLith and analyzing the wave motion characteristics. Studied the effect of Kathmandu basin effect on incoming seismic waves as function of spectral accelerations. 2. Collapse probability of structures in sedimentary basins

Period: 2020-2022Location: Indian Institute of Technology HyderabadAdvisor: Dr. Surendra Nadh SomalaDescriptionUsing OpenSees software, modelled and analyzed the steel structures and<br/>reported the collapse fragility for different sets of ground motions.

3. Seismic risk estimation in Indo-Gangetic region

Period	: 2022-2023			
Location	: Swinburne University of Technology, Australia			
Advisor	: Dr. Hing-Ho Tsang			
Description				
Estimation of societal and economical loss in the region by probabilistic				
seismic hazard assessment.				

Master of Technology (Earthquake Engineering)	2013 - 2015
Indian Institute of Technology Roorkee.	CGPA: 7.42
Specialization: Numerical modelling,	
Structural Dynamics	
Bachelor of Technology (Civil Engineering)	2008 - 2012
University College of Engineering, JNTU Kakinada	71.45 %
Specialization: Civil Engineering	

# **RESEARCH INTERESTS**

Numerical simulations of Earthquakes, High Performance Computing, Seismology, Basin amplification, MachineLearning in earthquake engineering, Hazard and Risk assessment.

## **TECHNICAL SKILLS**

Simulation and meshing tools	:	CUBIT (with Python interface), PyLith, and SPECFEM 3D (Earthquake simulation frameworks with parallel processing), MATLAB, ParaView.
Risk and loss calculation tool	:	SELENA, OpenSees, DYANAS, MATLAB
Structural design tools	:	SAP2000, STAAD Pro, ETABS, OpenSees
Others	:	Good knowledge in working with High Performance Computers (HPC), Linux based servers, Shell scripts, Batch files, MS Office suite

# **RESEARCH EXPERIENCE**

#### **Junior Research Fellow**

Indian Institute of Technology Hyderabad

#### Expertise:

- Numerical modelling of 3D Indo-Nepal border region and simulation of 2015 Mw 7.8 Nepal Earthquake
- Amplification of Kathmandu and Indo-Gangetic basins
- Parallel processing HPC tools like, SPECFEM3D and PyLith

# **TEACHING AND MENTORING EXPERIENCE**

#### **Assistant Professor**

Department of Civil Engineering Vignan's University, Andhra Pradesh, India May 2015 – Dec 2017 (2 years 7 months)

## **INDUSTRIAL EXPERIENCE**

Engineer (Project Management) PENNAR Engineered Building Systems Lmt, Hyderabad, India

Jun 2012 – June 2013 (13 months)

# **APPRECIATIONS AND MEMBERSHIPS**

- All India GATE rank qualified with 96 percentiles.
- Qualified and availed MHRD fellowship as a part of the Ph.D. program at IIT-Hyderabad.
- Qualified and availed SUPRA fellowship as a part of Swinburne university partnered Ph.D. program.
- Participated in 7 days' workshop on, "Advanced Seismology, Seismic Hazards & Earthquake Engineering: Theory, Simulation & Observation" conducted by NIT-Agartala (ASSHEE 2019)" December 12<sup>th</sup> -17<sup>th</sup> h,2019.
- Best presentation award in International Conference by ASMA-2021, NIT Silchar.
- Member of American Society of Civil Engineers (ASCE)
- Member of Seismological Society of America (SSA)
- Event manager for department Tech-fest at Indian Institute of Technology Roorkee
- National Cadet Corp (NCC) Air force with B certificate

Jan 2018 – June 2018 (6 months)

#### REFERENCES

- Dr. Surendra Nadh Somala Associate Professor, Civil Engineering Department Indian Institute of Technology Hyderabad, India surendra@ce.iith.ac.in
- Dr. Hing-Ho Tsang Associate Professor, Department of Civil and Construction Engineering, Swinburne University of Technology, Australia htsang@swin.edu.au
- Dr. Vipul Silwal Assistant Professor, Department of Earth Science Indian Institute of Technology Roorkee, India vipul.silwal@es.iitr.ac.in

## **RESEARCH PUBLICATIONS**

#### **SCI Indexed Journals**

- [1] Parla, R., B. Shanmugasundaram and S. N. Somala (2022) "Basin Effects on the Seismic Fragility of Steel Moment Resisting Frame Structures: Impedance Ratio, Depth, and Width of Basin" *International Journal of Structural Stability and Dynamics*, 22(9), 2250108 (https://doi.org/10.1142/S0219455422501085)
- [2] Parla, R., and S. N. Somala (2022) "Seismic Ground Motion Amplification in 3D Sedimentary Basins: The Effect of Source Mechanism and Intensity Measures", *Journal of Earthquake and Tsunami*, 16(4), 2250008 (<u>https://doi.org/10.1142/S1793431122500087</u>)
- [3] Somala, S. N., R. Parla, and S. Mangalathu (2022) "Basin Effects on TallBridges in Seattle from M9 Cascadia scenarios", *Engineering Structures*, 260,114252 (<u>https://doi.org/10.1016/j.engstruct.2022.114252</u>)
- [4] Parla, R., and S. N. Somala (2022) "Numerical Modeling of Quaternary Sediment Amplification. Basin Size, ASCE Site Class and Fault Location", *International Journal of Geotechnical Earthquake Engineering*, 13(1), 1-20 (<u>https://doi.org/10.4018/ijgee.303589</u>)
- [5] Somala, S. N., S. Mangalathu, S. Chanda, K. S. K. Karthik Reddy, and R. Parla (2022) "Focal Mechanism Influence with Azimuth using Near-Field Simulated Ground Motion: Application to Multi-Span Continuous Concrete Single Frame Box Girder Bridge", ASCE Journal of Bridge Engineering, 27(6), 04022034 (https://doi.org/10.1061/(ASCE)BE.1943-5592.0001875)

#### **International conferences and presentations**

- Parla R, S. N. Somala, "Hysteresis Response of Structures in Sediment Basins Subjected to Finite Fault Rupture and Effect on Basin Materials on Seismic Response of Structures", ASMA, October 2021, NIT-Silchar.( <u>https://doi.org/10.1007/978-3-031-05509-6\_32</u>)
- [2] Parla R, K. S. K Karthik Reddy, S. N. Somala, "Pulse-period Characterization at Basin and Bedrock", *EERI Annual Meeting*, March 2021
- [3] Parla, R., and S. N. Somala, "Multi-modal response spectra due to sedimentary basins and their implications for hazard", 15th Annual Meeting Asia Oceania Geosciences Society (AOGS), SE22-35-A069, Honolulu, Hawaii, June 2018