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# Ramon Varghese

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**CAREER**                      **Senior Project Officer, Indian Institute of Technology Madras**                      2020-Present

**EDUCATION**                      **Doctor of Philosophy (Ph.D) in Geotechnical Engineering**                      2014-2020

**Indian Institute of Technology Madras, Chennai, India**

*Thesis: 'Kinematic and Inertial Response of Piled Raft Foundations: Numerical and Experimental Studies'*

*Supervisors: Prof. A. Boominathan, Dr. Subhadeep Banerjee*

**Master of Technology in Soil Mechanics and Foundation Engineering**                      2012-2014

**Sardar Vallabhbhai National Institute of Technology, Surat, India**

*Thesis: Analysis of laterally loaded pile groups*

*Cumulative GPA: 8.98*

**Bachelor of Technology in Civil Engineering**                      2008-2012

**TKM College of Engineering, University of Kerala**

*Cumulative GPA: 7.97*

## PUBLICATIONS

### *Peer Reviewed Journals*

1. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2020) Stiffness and Load Sharing Characteristics of Piled Raft foundations Subjected to Dynamic Loads. *Soil Dynamics and Earthquake Engineering*, 133, 106117.
2. Varghese, Ramon, M. Senthin Amuthan, A. Boominathan, and Subhadeep Banerjee. (2019). Cyclic and postcyclic behaviour of silts and silty sands from the Indo Gangetic Plain. *Soil Dynamics and Earthquake Engineering*, 125, 105750.
3. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2019). Seismic response characteristics of a piled raft in clay. *Journal of Earthquake and Tsunami*, 13(01), 1950005.

### *Book Chapters*

1. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2019). Numerical Analysis of Seismic Response of a Piled Raft Foundation System. In *Soil Dynamics and Earthquake Geotechnical Engineering* (pp. 227-235). Springer, Singapore.
2. Boominathan, A., Varghese, Ramon, & Nair, Srilakshmi. K. (2018). Soil–structure interaction analysis of pile foundations subjected to dynamic loads. In *Geotechnics for Natural and Engineered Sustainable Technologies* (pp. 45-61). Springer, Singapore.

*Conference Proceedings*

1. A. Boominathan, A Srinivas, Varghese, Ramon. (2019). "Response of a Critical Structure to a Spatially Varying Ground Motion" *Proceedings of 7th International Conference on Earthquake Geotechnical Engineering, Rome, Italy, 2019*
2. A. Boominathan, Varghese, Ramon. (2019). "A Study on the Effect of Pile Cap on the Vertical Impedance of a Single Pile" *Proceedings of the 16th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering, Taipei, Taiwan, 2019*
3. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2019). "Pile Induced Filtering of Seismic Ground Motion in Homogeneous Soil" *Proceedings of 5th International Conference on Modeling & Simulation in Civil Engineering, Kollam, Kerala, 2019*
4. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2018). "Kinematic Response Characteristics Of A Piled Raft Foundation" *Proceedings of 43rd Annual Conference of the Deep Foundations Institute at Anaheim California, USA during Oct 24-27, 2018*
5. Varghese, Ramon, A. Boominathan, and Subhadeep Banerjee. (2017). "Substructure based Numerical Simulation of Seismic Response of a Piled Raft System" *Proceedings of 3rd International Conference on Performance Based Design in Earthquake Geotechnical Engineering (PBD-III), 2017, Vancouver, Paper no. 195.*
6. Varghese, Ramon, Shukla, S.J, Patil, H.S. (2014). "A Study on Group Behaviour in Laterally Loaded Pile Groups Using 3D FEM" *Proceedings of 5th Young Indian Geotechnical Engineers Conference 2014, Vadodara, India*

**RESEARCH INTERESTS**

- **Soil-pile-structure interaction:** Numerical modeling; Physical modeling using 1g shaking table testing; Kinematic soil-pile interaction; Evaluation of pile impedances
- **Finite element analysis:** Coupled FEM-BEM methods; Substructuring methods for SSI analysis
- **Cyclic response of silty soils:** Strain dependent soil properties; Bender element testing; Post cyclic behavior; Pore pressure modeling

**COMPUTATIONAL SKILLS**

Programming languages: *C++*, *Matlab*  
Analysis programs: *ACS SASSI*, *SASSI2010*, *Plaxis 3D*, *SAP2000*, *Surfseis*  
Control & Data Acquisition: *Catman AP*

**ACADEMIC AWARDS**

- Graduate Scholarship for Doctoral Studies: MHRD, Govt. of India
- Graduate Scholarship for Master's degree: MHRD, Govt. of India
- Merit based fee waiver for B.Tech degree: Govt. of Kerala, India

**ACADEMIC EXPERIENCE**

**Teaching assistant** at IIT Madras (Fall semesters of 2016, 2017, & 2018) for Soil Dynamics (CE5320), a graduate level course at the Department of Civil Engineering IIT Madras.

**INDUSTRY INTERACTION**

- Student coordinator for the Nuclear Power Corporation of India Ltd. (NPCIL) sponsored project on 'Methodology for Seismic SSI Analysis of Nuclear Structures';

Actively participated in the development of methodology for the use of the SASSI analysis methodology for pile supported nuclear structures.

- Assisted in carrying out Cyclic Triaxial, Resonant column and Bender element testing at IIT Madras for the development of strain dependent modulus degradation and damping curves for soils from the NPCIL project site at Gorakhpur, Haryana.
- Assisted in extensive field testing programs on full scale piles for projects where foundations are subjected to dynamic loads from machinery. Field experience includes vertical and lateral dynamic load tests and analysis for Reliance industries (Hazira), Indian Oil Corporation (Bongaigaon), the Wanakbori Thermal Power Station (Wanakbori), and Nirma Power plant (Gujarat).
- Actively involved in MASW surveys as part of Geotechnical investigations for the Tamil Nadu Slum Clearance Board, around Chennai City; Participated in a training course on the MASW technique organized by the SEG at Anaheim, USA during October 2018.
- Assisted in the ground vibration monitoring program during the controlled demolition of buildings at Maradu, Kerala, in January 2020, the first such demolition project executed in India.

#### CONFERENCES ATTENDED

##### **International Conferences/Workshops**

- Attended and presented a paper at the *3rd International Conference on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III)*, held at Vancouver during July 16-19, 2017
- Attended and presented a paper at the *43rd Annual Conference of the Deep Foundations Institute*, held at Anaheim U.S.A during 24-27 Oct, 2018
- Attended a training workshop on the MASW testing as part of *88th Annual Conference of the Society of Exploration Geophysicists*, held at Anaheim, U.S.A during 12-13 Oct, 2018
- Attended and presented a paper at the *7th International Conference on Earthquake Geotechnical Engineering (VII ICEGE)* in Roma, Italy, 17-20 June 2019

##### **National Conferences/Workshops**

- Attended *Indian Geotechnical Conference* in December 2017 held at IIT Guwahati
- Attended the *Sixth International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions* held at IIT Madras during January 21-23, 2015
- Attended *Annual Conference of the Deep Foundations Institute of India*, 2015
- Attended and presented a paper at the *Indian Geotechnical Conference (IGC-2016)*, held during 15-17 December, 2016
- Presented a paper at the *5th International Conference on Modeling & Simulation in Civil Engineering*, held at Kollam, Kerala, during December 11-13, 2019

#### SOCIETY MEMBERSHIPS

Life Member, **Indian Geotechnical Society** (LM4573)  
Member, **ISSMGE** (2018-2022)

Student Member, **ASCE** (Member no.000011459524)

Student Member, The **Deep Foundations Institute** of India

**EXTRACURRICULAR  
ACTIVITIES**

Writing: Writes articles and short stories for a blog ([thinkerspark.blogspot.in](http://thinkerspark.blogspot.in))

- Film making: Completed 8 short films till date including educational film on geotechnical investigation in 2013.

**PERSONAL  
DETAILS**

- Date of Birth: 22 June 1990
- Citizenship: Indian
- Passport no. P6246999
- Marital status: Unmarried
- Languages: English, Malayalam, Hindi

**REFERENCES**

**Prof. A. Boominathan**

Professor,  
Department of Civil Engineering,  
Indian Institute of Technology, Madras  
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**Dr. Subhadeep Banerjee**

Associate Professor,  
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**Dr. Rajiv Ranjan**

Additional Chief Engineer (Civil),  
Nuclear Power Corporation of India Limited (NPCIL),  
B-0-8, Nabhikiya Urja Bhavan (NUB),  
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