Curriculum Vitae

Dr. Debarghya Chakraborty
Assistant Professor,
Department of Civil Engineering,
Indian Institute of Technology (IIT) Kharagpur,
Kharagpur – 721302,
West Bengal, India

Personal details

Date of birth: 12th August, 1983 **Nationality:** Indian

Contact information

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Educational qualifications

Degree	Institution	Area	Year
Ph.D.	Indian Institute of Science Bangalore (IISc Bangalore)	Civil Engineering	2013
M.Tech.	Indian Institute of Technology Bombay (IIT Bombay)	Civil Engineering (Specialization: Geotechnical Engineering)	2009
B.Tech.	Jalpaiguri Government Engineering Collage (Under West Bengal University of Technology)	Civil Engineering	2006

Experience

Designation	Institute/Organization	Duration
Assistant Professor	Indian Institute of Technology (IIT) Kharagpur	June, 2016 to till date
Assistant Professor (on Tenure Track)	Indian Institute of Technology (IIT) Kharagpur	Dec., 2014 to June, 2016
Visiting Assistant Professor	Indian Institute of Technology (IIT) Kharagpur	June, 2013 to Dec., 2014
IISc Research Associate	Indian Institute of Science (IISc) Bangalore	Feb., 2013 to June, 2013
Project Assistant	Indian Institute of Science (IISc) Bangalore	Oct., 2009 to Dec., 2009
Assistant Engineer-Civil (Design)	M. N. Dastur and Company (P) Ltd., Kolkata	July, 2006 to July, 2007

Research interests

- Computational Geomechanics
- Geotechnical Earthquake Engineering
- Reinforced Soil Structures
- Reliability in Geotechnical Engineering

List of publications

Journal: *(Total number 40)*

1. Halder, K., and **Chakraborty, D.** (2019). "Probabilistic bearing capacity of strip footing on reinforced soil slope." *Computers and Geotechnics, Elsevier*, 116, 103213-1–11.
2. Halder, K., and **Chakraborty, D.** (2019). "Effect of interface friction angle between soil and reinforcement on the bearing capacity of strip footing placed on the reinforced slope." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 19(5), 06019008-1-20.
3. Halder, K., and **Chakraborty, D.** (2019). "Seismic bearing capacity of strip footing placed on a reinforced slope." *Geosynthetics International, Institution of Civil Engineers, UK*, 26(5), 474–484.
4. Krishnan, K., Halder, K., and **Chakraborty, D.** (2019). "Seismic bearing capacity of a strip footing over an embankment of anisotropic clay." *Frontiers in Built Environment,* 5, 134 (1-10), DOI: 10.3389/fbuil.2019.00134.
5. **Chakraborty, D.** (2019). "Use of a non-associated flow rule for determining the stability of a vertical circular excavation." *Acta Geotechnica, Springer*, 14(1), 247–252.
6. Halder, K., **Chakraborty, D.,** and Dash, S. K. (2019). "Bearing capacity of a strip footing situated on soil slope using a non-associated flow rule in lower bound limit analysis." *International Journal of Geotechnical Engineering, Taylor and Francis,* 13(2), 103–111.
7. **Chakraborty, D.** (2018). "Lateral resistance of buried pipeline in c-ϕ soil." *Journal of Pipeline Systems – Engineering and Practice, American Society of Civil Engineers* (*ASCE*), 9(1), 06017006-1-7.
8. Halder, K., and **Chakraborty, D.** (2018). "Bearing capacity of strip footing placed on the reinforced soil slope." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 18(11), 06018025-1-15.
9. Banerjee, S. K., and **Chakraborty, D.** (2018). "Behavior of twin tunnels under different physical conditions." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 18(8), 06018018-1-16.
10. Banerjee, S. K., and **Chakraborty, D.** (2018). "Stability analysis of a circular tunnel underneath a fully liquefied soil layer*." Tunnelling and Underground Space Technology, Elsevier*, 78, 84–94.
11. Banerjee, S. K., and **Chakraborty, D.** (2018). "Stability of long circular tunnels in sloping ground." *Geomechanics and Geoengineering: An International Journal, Taylor and Francis*, 13(2), 104–114.
12. Halder, K., and **Chakraborty, D.** (2018). "Probabilistic stability analyses of reinforced slope subjected to strip loading." *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, 49(4), 92–99.
13. Banerjee, S. K., and **Chakraborty, D.** (2017). "Influence of undercut and surface crack on the stability of a vertical escarpment." *Geomechanics and Engineering, Techno-Press*, 12(6), 965–981.
14. **Chakraborty, D.,** and Sawant, A. S. (2017). "Seismic bearing capacity of strip footing above an unsupported circular tunnel in undrained clay." *International Journal of Geotechnical Engineering, Taylor and Francis*, 11(1), 97–105.
15. **Chakraborty, D.**, and Kumar, J. (2017). "Stability numbers for a vertical circular excavation with surcharge." *Proceedings of the National Academy of Sciences, India* (*Section A – Physical Sciences*)*, Springer*, 87(1), 115–123.

16. Banerjee, S. K., and **Chakraborty, D.** (2016). "Seismic stability of a long unlined circular tunnel in sloping ground." *Canadian Geotechnical Journal, NRC Research Press*, 53(8), 1346–1352.
17. **Chakraborty, D.**, and Mahesh, Y. (2016). "Seismic bearing capacity of strip footings on an embankment by using lower bound limit analysis." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 16(3), 06015008-1-11.
18. **Chakraborty, D.**, and Kumar, J. (2016). "Uplift resistance of interfering buried pipelines in sand." *Journal of Pipeline Systems – Engineering and Practice, American Society of Civil Engineers* (*ASCE*), 7(1), 06015002-1-9.
19. **Chakraborty, D.** (2016). "Bearing capacity of strip footings by incorporating a non-associated flow rule in lower bound limit analysis." *International Journal of Geotechnical Engineering, Taylor and Francis*, 10(3), 311–315.
20. **Chakraborty, D.**, and Kumar, J. (2015). "Bearing capacity of circular footings on reinforced soils." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 15(1), 04014034-1-9.
21. **Chakraborty, D.**, and Kumar, J. (2015). "Seismic bearing capacity of shallow embedded foundations on sloping ground surface." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 15(1), 04014035-1-8.
22. **Chakraborty, D.**, and Kumar, J. (2015). "Use of von Mises yield criterion for solving axisymmetric stability problems." *Geomechanics and Geoengineering: An International Journal, Taylor and Francis*, 10(3), 234–241.
23. **Chakraborty, D.**, and Kumar, J. (2014). "Solving axisymmetric stability problems by using upper bound finite elements limit analysis and linear optimization." *Journal of Engineering Mechanics, American Society of Civil Engineers* (*ASCE*), 140(6), 06014004-1-9.
24. **Chakraborty, D.**, and Choudhury, D. (2014). "Stability of non-vertical waterfront retaining wall supporting inclined backfill under earthquake and tsunami." *Ocean Engineering, Elsevier*, 78, 1–10.
25. **Chakraborty, D.**, and Choudhury, D. (2014). "Sliding stability of non-vertical waterfront retaining wall supporting inclined backfill subjected to pseudo-dynamic earthquake forces." *Applied Ocean Research*, *Elsevier*, 47, 174–182.
26. **Chakraborty, D.**, and Kumar, J. (2014). "Uplift resistance of long pipelines in the presence of seismic forces." *Journal of Pipeline Systems – Engineering and Practice, American Society of Civil Engineers* (*ASCE*), 5(4), 06014003-1-9.
27. **Chakraborty, D.**, and Kumar, J. (2014). "Effect of groundwater seepage on uplift resistance of buried pipelines." *Proceedings of the National Academy of Sciences, India* (*Section A – Physical Sciences*)*, Springer*, 84(4), 595–605.
28. **Chakraborty, D.**, and Kumar, J. (2014). "Bearing capacity of strip foundations in reinforced soils." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*)*,* 14(1), 45–58. [*This paper has been awarded the 'Excellent Paper Award to Junior Individuals – 2014' by International Association for Computer Methods and Advances in Geomechanics (IACMAG), USA*]
29. **Chakraborty, D.**, and Kumar, J. (2014). "Vertical uplift resistance of pipes buried in sand." *Journal of Pipeline Systems – Engineering and Practice, American Society of Civil Engineers* (*ASCE*), 5(1), 04013009-1-10.
30. Kumar, J., and **Chakraborty, D.** (2013). "Seismic bearing capacity of foundations on cohesionless slopes." *Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers* (*ASCE*)*,* 139(11), 1986–1993.

31. Kumar, J., and **Chakraborty, D.** (2013). "Bearing capacity of foundations with inclined ground water seepage." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 13(5), 611–624.
32. **Chakraborty, D.**, and Kumar, J. (2013). "Bearing capacity of piles in soft clay underlaid by cohesive frictional soil." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 13(3), 311–317.
33. Kumar, J., and **Chakraborty, D.** (2013). "Linearization of Drucker-Prager yield criterion for axisymmetric problems: Implementation in lower bound limit analysis." *International Journal of Geomechanics, American Society of Civil Engineers* (*ASCE*), 13(2), 153–161.
34. **Chakraborty, D.**, and Kumar, J. (2013). "Dependency of N_γ on footing diameter for circular footings." *Soils and Foundations, Japanese Geotechnical Society, Elsevier*, 53(1), 173–180.
35. **Chakraborty, D.**, and Kumar, J. (2013). "Stability of a long unsupported circular tunnel in soils with seismic forces." *Natural Hazards*, *Springer,* 68(2), 419–431.
36. **Chakraborty, D.**, and Kumar, J. (2013). "Bearing capacity of foundations on slopes." *Geomechanics and Geoengineering: An International Journal, Taylor and Francis,* 8(4), 274–285.
37. **Chakraborty, D.**, and Choudhury, D. (2013). "Pseudo-static and pseudo-dynamic stability analysis of tailings dam under seismic conditions." *Proceedings of the National Academy of Sciences, India* (*Section A – Physical Sciences*), *Springer,* 83(1), 63–71.
38. Kumar, J., and **Chakraborty, D.** (2012). "Stability number for an unsupported vertical excavation in c-ϕ soil." *Computers and Geotechnics, Elsevier*, 39, 79–84.
39. **Chakraborty, D.,** and Choudhury, D. (2012). "Seismic stability and liquefaction analysis of tailings dam." *Disaster Advances,* (*ISSN: 0974-262X*), 5(3), 15–25.
40. **Chakraborty, D.,** and Choudhury, D. (2009). "Investigation of the behavior of tailings earthen dam under seismic conditions." *American Journal of Engineering and Applied Sciences,* (*ISSN: 1941-7020*) *Science Publications, USA,* 2(3), 559–564.

ASCE Geotechnical Special Publication: *(Total number 03)*

41. Halder, K., and **Chakraborty, D.** (2019). "Bearing capacity of a strip footing situated on reinforced cohesionless soil slope using non-associated flow rule." In Geo-Congress 2019: Geotechnical Materials, Modeling, and Testing, *Geotechnical Special Publication, American Society of Civil Engineers* (*ASCE*), No. 310, 135–144.
42. Halder, K., **Chakraborty, D.,** and Dash, S. K. (2018). "Seismic bearing capacity of a strip footing situated on soil slope using a non-associated flow rule in lower bound limit analysis." In Geotechnical Earthquake Engineering and Soil Dynamics V: Numerical Modeling and Soil Structure Interaction, *Geotechnical Special Publication, American Society of Civil Engineers* (*ASCE*), No. 292, 454–463.
43. **Chakraborty, D.,** and Choudhury, D. (2011). "Seismic behavior of tailings dam using FLAC^{3D}." In Geo-Frontiers 2011: Advances in Geotechnical Engineering, *Geotechnical Special Publication, American Society of Civil Engineers* (*ASCE*), No. 211, 3138–3147.

International Conference Proceeding: *(Total number 03)*

44. **Chakraborty, D.** (2016). "Seismic bearing capacity of footings in c-ϕ soil by using a non-associated flow rule." *Proc. 8th Asian Young Geotechnical Engineers Conference (8AYGEC) on Challenges and Innovations in Geotechnics,* organized by Kazakhstan Geotechnical Society and TC305 of ISSMGE, August 5 – 7, 2016, Astana, Kazakhstan, pp. 169-174.

45. Halder, K., **Chakraborty, D.,** and Dash, S. K. (2016). "Behaviour of reinforced soil slopes under strip loading." *Proc. International Geotechnical Engineering Conference on Sustainability in Geotechnical Engineering Practices and Related Urban Issues*, organized by Indian Geotechnical Society (IGS) and ISSMGE, September 23 – 24, 2016, Mumbai, India, Abstract ID 64 in CD, pp. 1-3.
46. **Chakraborty, D.,** and Choudhury, D. (2012). "Liquefaction potential analysis and dynamic displacement of tailings dam using FLAC^{3D}." *Proc. 2nd International Conference on Performance-Based Design in Earthquake Geotechnical Engineering,* organized by TC203 of ISSMGE, May 28 - 30, 2012, Taormina, Italy, Paper No. 7.02 in CD, pp. 852–861. [*This paper received 'IGS-FERROCO YGE Best Paper Biennial Award – 2014' as the best paper on 'Dam Engineering and Allied Areas', given by Indian Geotechnical Society, New Delhi, India*]

National Conference/Seminar Proceeding: *(Total number 06)*

47. Halder, K., and **Chakraborty, D.** (2018). "Probabilistic stability analysis of conical excavation." *Proc. Indian Geotechnical Conference, IGC-2018*, organized by Indian Geotechnical Society (IGS) and IISc Bengaluru, December 13 – 15, 2018, IISc Bengaluru, India, pp. 1–6.
48. Ghosh, S., Halder, K., and **Chakraborty, D.** (2018) "Probabilistic study on bearing capacity of strip footing in spatially variable soil." *Proc. National Seminar on Advanced Construction and Computational Tools in Geotechniques –Practice to Theory,* organized by Indian Geotechnical Society (IGS) Kolkata Chapter, July 28 – 29, 2018, Kolkata, India, pp. 1–5.
49. Nayek, T. K., Halder, K., and **Chakraborty, D.** (2017). "Experimental investigation on the behaviour of geogrid-reinforced soil slope under strip loading." *Proc. Indian Geotechnical Conference, IGC-2017 (GeoNEst),* organized by Indian Geotechnical Society (IGS) and IIT Guwahati, December 14 – 16, 2017, IIT Guwahati, India, pp. 1–4.
50. Banerjee, S. K., and **Chakraborty, D.** (2015). "Failure of a surface strip footing above an unlined long tunnel for cohesive frictional soils." *Proc. 5th Indian Young Geotechnical Engineers Conference,* organized by Indian Geotechnical Society (IGS) Vadodara Chapter, IEI Vadodara, MS University Baroda, March 14 – 15, 2015, Vadodara, India, pp. 88–91.
51. **Chakraborty, D.,** and Choudhury, D. (2010). "Seismic slope stability analysis of tailings earthen dam using TALREN 4." *Proc. Indian Geotechnical Conference, IGC-2010 (GEOtrendz),* organized by Indian Geotechnical Society (IGS) and IIT Bombay, December 16 – 18, 2010, IIT Bombay, Mumbai, India, Vol. 1, pp. 187–190.
52. Das, A., Choudhury, D., Rawat, A., and **Chakraborty, D.** (2008). "Seismic slope stability analysis using MSD model for different modes of movements." *Proc. Diamond Jubilee Conference on Landslide Management – Present Scenario & Future Directions,* organized by CBRI, February 10 – 12, 2008, CBRI, Roorkee, India, pp. 316–327. [*This paper received Best-Paper Award in the Conference*]

Teaching (at IIT Kharagpur)

Type of course	Sl. No.	Course No.	Title of the Course	Level	During
Theory	1	CE60142	Computational Geomechanics	PG	Spring 2019-20, Spring 2018-19, Spring 2017-18, Spring 2016-17, Spring 2015-16, Spring 2014-15
	2	CE60119	Rock Mechanics and Tunneling	PG	Autumn 2019-20, Autumn 2018-19
	3	ME10001	Mechanics	UG	Spring 2017-18, Autumn 2016-

					17, Spring 2015-16, Autumn 2015-16, Autumn 2014-15, Summer Quarter 2013-14, Spring 2013-14, Autumn 2013-14
	4	CE31410	Rock Mechanics and Tunnelling	UG	Autumn 2019-20, Autumn 2018-19
	5	CE20105	Surveying	UG	Autumn 2017-18
Laboratory	1	CE13001	Engineering Drawing and Computer Graphics	UG	Spring 2018-19
	2	CE39009	Soil Mechanics Laboratory	UG	Autumn 2019-20, Autumn 2018-19, Autumn 2017-18, Autumn 2016-17, Autumn 2015-16, Autumn 2014-15, Autumn 2013-14
	3	CE29002	Surveying Practice	UG	Spring 2019-20, Spring 2016-17, Spring 2014-15, Spring 2013-14

Supervision of students (at IIT Kharagpur)

Degree	Guidance	Number Completed	Number in Progress
Ph.D.	Single	-	4
	Joint	1	1
M.Tech.	Single	10	2
B.Tech.	Single	11	1

Sponsored research projects

Sl. No.	Project title	Sponsor	PI / Co-PI	Sanctioned Grant (in Rs)	Duration	Status
1	Investigation on the performance of geogrid-reinforced soil slopes under strip loading	Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Govt. of India	PI	25.04 lakh	17-07-2014 to 16-01-2018	Completed
2	Performance of under reamed pile foundations subjected to static and dynamic loading	Institute Scheme for Innovative Research and Development (ISIRD), SRIC, IIT Kharagpur	PI	27.21 lakh	03-12-2015 to 02-12-2019	Ongoing
3	Estimation of settlements for design of facilities	Ministry of Human Resource Development	Co-PI	58.92 lakh	19-09-2014 to 31-03-	Ongoing

	to be constructed over MSW landfills	(MHRD), Govt. of India			2019	

Awards and achievements

- *Top Teaching Feedback*: Name appeared in the list of Teachers Receiving Top Teaching Feedback Responses at IIT Kharagpur for the Academic Session 2014-2015, 2015-2016, 2016-2017, 2017-2018 (for teaching *Mechanics* in under-graduate level).
- *IEI Young Engineers Award 2018-19* of The Institution of Engineers (India) in Civil Engineering discipline (for the year 2018-2019).
- *ISCA Young Scientists Award* of the Indian Science Congress Association in the Section of Engineering Sciences (for the year 2014-2015).
- *Prof. N. S. Govinda Rao Gold Medal* from *IISc Bangalore* for the *Best Ph.D Thesis* in the Department of Civil Engineering (for the academic year 2012-2013).
- *Excellent Paper Award to Junior Individuals – 2014* given by International Association for Computer Methods and Advances in Geomechanics (IACMAG), USA.
- *IGS-FERROCO YGE Best Paper Biennial Award – 2014* as the best paper on 'Dam Engineering and Allied Areas', given by Indian Geotechnical Society (IGS), India.
- *Fast Track Project Grant for Young Scientists – 2014* from Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Govt. of India.
- Nominated to represent Indian Geotechnical Society (IGS) on the *International Technical Committee TC-104 on "Physical Modelling in Geotechnics*" of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) for the term 2018-2021.
- Nominated as a member of the Indian delegation for the 'India-New Zealand Workshop on Resilient Structures' held at New Zealand during December 1–5, 2014. The New Zealand Ministry of Business, Innovation and Employment (MBIE) and the Indian Department of Science and Technology (DST) supported this.
- *Best paper award* of the Diamond Jubilee Conference on Landslide Management at CBRI, Roorkee, India (2008).
- Topper of the M.Tech. Geotechnical Engineering batch 2007-2009 at IIT Bombay (CPI: 9.92/10).

Administrative assignments (at IIT Kharagpur)

Institute:

- Program Officer, NSO (Health and Fitness) (August, 2017 to Till date)

Department:

- Time-Table in-charge, Civil Engineering Department (July, 2019 to Till date)
- Reports and Website in-charge, Civil Engineering Department (July, 2019 to Till date)
- Faculty advisor for the under-graduate students of Civil Engineering Department (July, 2015 to June, 2019)
- Training and Placement in-charge, Civil Engineering Department (July, 2017 to June, 2019)
- Laboratory in-charge for Survey Laboratory, Civil Engineering Department (July, 2013 to December, 2017)
- Member of the Departmental purchase committee (July, 2013 to December, 2017)
- Representative to Library from Civil Engineering Department (July, 2013 to June, 2016)

Lecture in Short Term Course

- Delivered lecture during the Short Term Course on *Advanced Computing Tools in Civil Engineering* (ACTCE 2018) organized by the Department of Civil Engineering, IIT Kharagpur, 5th – 9th March, 2018.
- Delivered lecture during the Short Term Course on *Mathematical Methods in Civil Engineering* organized by the Department of Civil Engineering, IIT Kharagpur, 19th - 23rd February, 2018.
- Delivered lecture during the Short Term Course on *Advanced Computing Tools in Civil Engineering* (ACTCE 2017) organized by the Department of Civil Engineering, IIT Kharagpur, 6th – 10th March, 2017.

Reviewed papers for following journals

- Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers
- International Journal of Geomechanics, American Society of Civil Engineers
- Journal of Pipeline Systems – Engineering and Practice, American Society of Civil Engineers
- Canadian Geotechnical Journal, NRC Research Press
- Ocean Engineering, Elsevier
- Soils and Foundations, Elsevier
- Computers and Geotechnics, Elsevier
- Tunnelling and Underground Space Technology, Elsevier
- Journal of Rock Mechanics and Geotechnical Engineering, Elsevier
- International Journal for Numerical and Analytical Methods in Geomechanics, Wiley
- Geotechnique, Institution of Civil Engineers, UK
- Geotechnique Letters, Institution of Civil Engineers, UK
- Geotechnical Testing Journal, ASTM International
- Natural Hazards, Springer
- Geomechanics and Geoengineering: An International Journal, Taylor and Francis
- Indian Geotechnical Journal, Springer
- INAE Letters, Springer
- Geomechanics and Engineering, Techno-Press
- Current Science
- International Journal of Geotechnical Earthquake Engineering

Service rendered to other institute or organization

- Taught *Engineering Mechanics* at Indian Institute of Petroleum and Energy (IIPE), Visakhapattnam (during 8th and 9th August, 2016)

Membership of professional bodies

- Life Member : The Indian Science Congress Association
- Life Member : Indian Geotechnical Society
- Member : The Institution of Engineers (India)
- Member : International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)