RITESH KUMAR, PhD

E4F Fellow
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Personal Information
Date of Birth : March 6, 1992
Nationality: Indian
Sex: Male

ACADEMIC DETAILS

Degree/Certificate	Discipline/University	Date	Grade
Doctorate Specialization:	*Civil Engineering: Geotechnics*		
Doctor of Philosophy	Tokyo Institute of Technology, Japan	Sep 25, 2020	3.91/4.5
Postgraduate Specialization:	*Civil Engineering: Geotechnics*		
Master of Engineering	Tokyo Institute of Technology, Japan	Sep 20, 2018	3.83/4.5
Postgraduate Specialization:	*Earthquake Engineering: Soil Dynamics*		
Master of Technology	Indian Institute of Technology Roorkee, India	Oct 03, 2015	8.818/10
Undergraduate Specialization:	*Civil Engineering*		
Bachelor of Technology	College of Engineering Roorkee, India	Nov 28, 2012	85.4%
Intermediate Certificate:	*Science*		
Class 12	U. K. Board, India	Jun 06, 2008	85.2%
High School Certificate:	*Science*		
Class 10	U. K. Board, India	Jun 03, 2006	81.3%

ACHIEVEMENTS

- Recipient of MEXT Scholarship (2016-2021)
- Recipient of DAAD Scholarship for Master's Dissertation Work at Leibniz University of Hanover, Germany (Sep 2014 – Apr 2015)
- University Gold Medal (Batch, 2008-2012)
- "Seth Roshan Lal Jain" Trophy and Gold Medal for the Best Student of College (2012)
- State Certificate of Merit (2008)
- Certificate of Excellence in Scilab Workshop Organized by Fillip Foundation through I.I.T. Bombay Funded by MHRD India
- Winner of "Kusth Mitao Abhiyaan Pratiyogita" at State Level (2004)

TECHNICAL SKILLS

- **FEM Software Proficiency** (OpenSees, SAP, ABAQUS, Plaxis, Geo-Studio)
- **Numerical methods** (FEM, FDM, DEM, SPH, MPM)

- **Languages** (Matlab, C++, Python)

COMMUNICATION SKILLS

- **Hindi** (Native)
- **English** (Professional)
- **Japanese** (Intermediate)

PROJECTS/INTERNSHIPS

- **University of California, Davis, USA** (Ph.D. Internship)
  [Project:Numerical modeling of an embankment treated with soil-cement walls: A comparative study of soil-liquefaction constitutive models using OpenSees (Oct 18 - Jan 19)]
- **Leibniz University of Hannover, Germany** (Master's Dissertation Work)
  [Project:Effects of autocorrelation length of varaible soil properties on behavior of monopiles (Sep 14 - Apr 15)]
- **College of Engineering Roorkee** (B. Tech. Project)
  [Project:Stability analysis of earth dams and levees (Jan 12 - Jun 12)]
- **College of Engineering Roorkee** (Research Internship)
  [Project:Earthquake resistant design of structures (Jun 11 - Aug 11)]
- **J.S.R. Associates, Roorkee** (Research Internship)
  [Project:Load testing of building at Doon University, Dehradun, India (Jun 10 - Jul 10)]

WORK EXPERIENCE

- **Postdoctoral Researcher**
  [Place:RIKEN Center for Computational Science (R-CCS), Kobe, Japan (Nov 20 - Dec 20)]
- **Assistant Professor**
  [Place:Graphic Era University, Dehradun, India (Jun 15 - Jul 16)]
- **Graduate Engineer Trainee**
  [Place:Larsen and Toubro Construction, BF division, New Delhi, India (Aug 12 - Jul 13)]

RESEARCH INTEREST

- Geotechnical earthquake engineering
- Offshore wind foundations
- Experimental and computational soil dynamics
- Site characterization and nonlinear ground response analysis
- Risk and reliability
- Data assimilation
- Machine learning
- Health monitoring of underground foundations/structures
- Geohazard assessment
- Modeling of landslides and debris flow
- Resilient built environment

INTERNATIONAL COLLABORATORS

- **Professor Ross W. Boulanger: UC Davis, USA**
  Project: Numerical modeling of an embankment treated with soil-cement panel walls

- **Senior Lecturer DMG Taboroda : Imperial College London, UK**
  Project: Offshore wind foundations under cyclic loading
- **Assistant Professor E. Ece Bayat: ITU, Turkey**
  Project: Element and system level dynamic response of partially saturated liquefiable ground
- **Associate Professor Kiyonobu Kasama: Kyushu University, Japan**
  Project: Reliablity based design for ground improvement
- **Associate Professor Yung-Yen Ko : National Cheng Kung University, Taiwan**
  Project: Liquefaction mitigation by recycled material
- **Senior Lecturer Gabriele Chiaro: UC, New Zealand**
  Project: Dynamic behavior of Toyoura sand

EXTERNAL RESEARCH/CONSULTANCY FUNDING

- **Nippon Steel and Sumitomo Corporation: COPI - 6 million JPY (55k USD) - COMPLETED**
  Funding for development of unique hybrid foundation to mitigate the liquefaction-induced effects on shallow foundation
- **GAIL, India: COPI - 20 million INR**
  Funding for Development of Auto-change detection system for Gas pipeline RoU surveillance using satellite images
- **FIG, IIT Roorkee: PI - 2 million INR**
  Funding for Design guidelines for offshore wind turbines under extreme environmental conditions
- **SATU, NCKU and IIT Roorkee: COPI - 0.5 million INR**
  Funding for Liquefaction mitigation by recycled material

PUBLICATION : Journal Papers

- **Reliability assessment of performance of granular column in a nonuniform liquefiable ground to mitigate the liquefaction-induced ground deformation** (**R. Kumar** and A.Takahashi)
  Georisk, January 2021, https://doi.org/10.1080/17499518.2020.1836378
- **Reliability assessment of physical modeling of liquefaction-induced effects on shallow foundation considering nonuniformity in the centrifuge model** (**R. Kumar**, K. Kasama, and A. Takahashi)
  Computers and Geotechnics, 122, June 2020; https://doi.org/10.1016/j.compgeo.2020.103558
- **Centrifuge modeling of hybrid foundation to mitigate the liquefaction-induced effects on shallow foundation resting on the liquefiable ground** (**R. Kumar**, M. Sawaishi, K. Horikoshi and A. Takahashi)
  Soils and Foundations, 59(6):2083-2098, December 2019; https://doi.org/10.1016/j.sandf.2019.11.002
- **Centrifuge testing to investigate effects of partial saturation on the response of shallow foundation in liquefiable ground under strong sequential ground motions** (**R. Kumar**, K. Horikoshi and A. Takahashi)
  Soil Dynamics and Earthquake Engineering, 125, October 2019; https://doi.org/10.1016/j.soildyn.2019.105728
- **Inelastic Response Spectrum for Seismic Soil Pile Structure Interaction** (P.K. Emani, **R. Kumar** and V.S. PhaniKant)
  International Journal of Geotechnical Earthquake Engineering, 7(2):24-34, June 2016; DOI: 10.4018/IJGEE.2016070102
- **Numerical modeling of an embankment treated with soil-cement walls: A comparative study of soil-liquefaction constitutive models using OpenSees** (**R. Kumar**, R. W. Boulanger and A. Takahashi)
  Soil Dynamics and Earthquake Engineering (in preparation)

PUBLICATION : Conference Papers

- **Serviceability assessment of offshore wind foundation using data assimilation techniques** (**R. Kumar**, S. Cheng, T. David MG, and S. Kontoe)
  Abstract submitted for 10th European Conference on Numerical Methods in Geotechnical Engineering, June 2023
- **Mapping the spatial soil variability of offshore foundation from the representative field tests using variational data assimilation method** (**R. Kumar**, T. David MG, and S. Kontoe)
  Abstract submitted for 9th international conference, 'Innovative Geotechnologies for Energy Transition, September 2023
- **Physical Modeling and Reliability Assessment of Effectiveness of Granular Columns in the Nonuniform Liquefiable Ground to Mitigate the Liquefaction-induced Ground Deformation** (**R. Kumar** and A. Takahashi)
  4th International conference on Performance Based Design in Geotechnical Earthquake Engineering China, July 2022

- **Stochastic displacement spectra for a liquefiable ground treated with granular columns** (**R. Kumar**, K. Horikoshi and A. Takahashi)
  17th World Conference on Earthquake Engineering, Sendai (Japan) 21-23 July 2020
- **Development of hybrid foundation to mitigate the liquefaction-induced settlement of shallow foundation** (**R. Kumar**, M. Sawaishi and A. Takahashi)
  7th International Conference on Earthquake Geotechnical Engineering, Roma (Italy) 17-20 June 2019)
- **Centrifuge testing to investigate the effects of partial saturation on liquefaction-induced settlement of shallow foundation** (**R. Kumar** and A. Takahashi)
  Proceedings of 53rd Japan National Conference of Geotechnical Engineering, July 2018
- **Numerical simulation of centrifuge test on liquefiable saturated Toyura sand with level ground** (**R. Kumar** and A. Takahashi)
  Proceedings of 2017 JAEE Annual Conference, November 2017
- **Development of hybrid foundation to mitigate the liquefaction effects under large earthquake** (**R. Kumar** and A. Takahashi)
  Proceedings of 2017 Taiwan-Japan Symposium on the Advancement of Urban Earthquake Hazard Mitigation Technology, pp. 113-116, September 2017
- **Study of Interaction between Axial and Lateral Loading on Piles during Seismically Induced Liquefaction** (P.K. Emani, **R. Kumar** and V.S. PhaniKant)
  6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, August 2016
- **Soil Parametric Study on Behaviour of Monopiles** (**R. Kumar** and B. K. Maheshwari)
  6th Annual Conference of the International Society for Integrated Disaster Risk Management, October 2015