Dr. Srikrishnan Siva Subramanian	
Position and Affiliation	Assistant Professor Centre of Excellence in Disaster Mitigation and Management (CoEDMM) Indian Institute of Technology Roorkee (IITR)
Phone	01332-285863 (Office); +91-8220923734 (Mobile)
Email	srikrishnan@dm.iitr.ac.in
ORCID id	https://orcid.org/0000-0003-4004-0894
Gender	Male
Date of Birth	16.07.1990
Websites:	Homepage at CoEDMM IITR; Sē~DiRe Laboratory; ResearchGate; Google Scholar

Scientific Profile

Dr S. Srikrishnan holds a master's in Geosciences (M.Sc.) from Bharathidasan University, India and a Doctorate of Engineering (Dr Eng.) in Field Engineering for the Environment (Geotechnical Engineering) from Hokkaido University, Japan. His research specializes in understanding the mechanisms of shallow landslides and debris flows initiation induced by rainfall and snowmelt. For this, he employs insitu monitoring, laboratory-scale experiments and slope/catchment-scale process-based numerical modelling. In his doctorate research, he focused on modelling the frozen ground, cold region hydrology, snow accumulation, and melt processes to analyze the slope stability and triggering of debris flows. In his recent works, he focuses on understanding the hillslope hydrology of shallow landslides and debris flows to develop thresholds for early warning systems (EWS) at slope scale and catchment scale. He has worked in the development of real-time landslide EWS in Japan and is currently in the process of employing the same in the Indian Himalayas.

Academic Education and scientific degrees	
25.09.2017	Doctorate of Engineering (Dr Eng) in Field Engineering for the Environment (Geotechnical Engineering) from Hokkaido University, Japan
02.06.2012	Integrated Master's in Geosciences (M.Sc.) from Bharathidasan University, India

Publications [In Reverse Chronological Order]

1. **Siva Subramanian, S.,** Srivastava, P., Yunus, A. P., Martha, T. R., & Sen, S. (2023). Numerical model derived intensity-duration thresholds for early warning of rainfall-induced debris flows in the Himalayas. ***Natural Hazards and Earth System Sciences Discussions***, 1-18. https://doi.org/10.5194/nhess-2022-297
2. Fan, X., Yunus, A. P., Yang, Y. H., **Siva Subramanian S**., Zou, C., Dai, L., ... & Huang, R. (2022). Imminent threat of rock-ice avalanches in High Mountain Asia. ***Science of The Total Environment***, 155380. https://doi.org/10.1016/j.scitotenv.2022.155380
3. Y Zhu, T Ishikawa, **Siva Subramanian S**, BT Nguyen (2022) A FEM-MPM hybrid coupled framework based on local shear strength method for simulating rainfall/runoff-induced landslide runout. ***Landslides***. 1-12. https://doi.org/10.1007/s10346-022-01849-z
4. BT Nguyen, T Ishikawa, Y Zhu, **Siva Subramanian S**, TT Nguyen (2022) New simplified transient method for determining the coefficient of permeability of unsaturated soil. ***Engineering Geology***. 106564 doi: https://doi.org/10.1016/j.enggeo.2022.106564
5. Marino P, **Siva Subramanian S**, Fan X and Greco R (2022) Changes in debris-flow susceptibility after the Wenchuan earthquake revealed by meteorological and hydro-meteorological thresholds. ***CATENA*** 210: 105929. doi: https://doi.org/10.1016/j.catena.2021.105929
6. Dave, R**., Siva Subramanian, S**., & Bhatia, U. (2021). Extreme precipitation induced concurrent events trigger prolonged disruptions in regional road networks. ***Environmental Research Letters***, 16(10), 104050. https://doi.org/10.1088/1748-9326/ac2d67
7. Zhu, Y., Ishikawa, T., Yamada, T.J. and **Siva Subramanian, S,** 2021. Probability Assessment of Slope Instability in Seasonally Cold Regions under Climate Change. ***Journal of Infrastructure Preservation and Resilience***. 2, 20. https://doi.org/10.1186/s43065-021-00034-1

8. Yang, F., Fan, X., **Siva Subramanian, S**., et al. 2021. *Catastrophic debris flows triggered by the 20 August 2019 rainfall, a decade since the Wenchuan earthquake, China*. ***Landslides.*** https://doi.org/10.1007/s10346-021-01713-6
9. Fan X, Dufresne A, Whiteley, J, Yunus, AP, **Siva Subramanian S,** et al. 2021. *Recent technological and methodological advances for the investigation of landslide dams*. ***Earth-Science Reviews.*** *218: 103646.* https://doi.org/10.1016/j.earscirev.2021.103646
10. Zhu, Y., Ishikawa, T., **Siva Subramanian, S**. & Luo, B. 2021. *Early warning system for rainfall- and snowmelt-induced slope failure in seasonally cold regions*. ***Soils and Foundations***, 61, 198-217, doi: https://doi.org/10.1016/j.sandf.2020.11.009.
11. Jiang, Z., Fan, X., **Siva Subramanian, S.,** Yang, F., Tang, R., Xu, Q. & Huang, R. 2021. *Probabilistic rainfall thresholds for debris flows occurred after the Wenchuan earthquake using a Bayesian technique*. ***Engineering Geology***, 280, 105965, doi: https://doi.org/10.1016/j.enggeo.2020.105965
12. Fan, X., Yunus, A. P., Scaringi, G., Catani, F., **Siva Subramanian, S.,** Xu, Q., & Huang, R. 2021. *Rapidly evolving controls of landslides after a strong earthquake and implications for hazard assessments.* ***Geophysical Research Letters****, 48 e2020GL090509.* https://doi.org/10.1029/2020GL090509
13. Yunus, A.P., Fan, X., **Siva Subramanian, S.,** Jie, D. & Xu, Q. 2021. Unraveling the drivers of intensified landslide regimes in Western Ghats, India. ***Science of the Total Environment***, 145357. https://doi.org/10.1016/j.scitotenv.2021.145357
14. **Siva Subramanian, S.,** Fan, X., Yunus, A.P., van Asch, T., Scaringi, G., et al., 2020. *A sequentially-coupled catchment-scale numerical model for snowmelt-induced soil slope instabilities.* ***Journal of Geophysical Research: Earth Surface*** 125, e2019JF005468. https://doi.org/10.1029/2019JF005468
15. Zhu Y, Ishikawa T, **Siva Subramanian S**.,Luo, B. 2020. *Simultaneous analysis of slope instabilities on a small catchment-scale using coupled surface and subsurface flows.* ***Engineering Geology.*** https://doi.org/10.1016/j.enggeo.2020.105750
16. Liu, J., Xu, Q., Wang, S., **Siva Subramanian, S.,** Wang, L. and Qi, X., 2020. *Formation and chemo-mechanical characteristics of weak clay interlayers between alternative mudstone and sandstone sequence of gently inclined landslides in Nanjiang, SW China.* ***Bulletin of Engineering Geology and the Environment.*** https://doi.org/10.1007/s10064-020-01859-y
17. Fan X, Dufresne A, **Siva Subramanian S**, Strom A, Hermanns R, Tacconi Stefanelli C, et al. 2020. *The formation and impact of landslide dams – State of the art*. ***Earth-Science Reviews*** . 203: 103116. https://doi.org/10.1016/j.earscirev.2020.103116
18. Fan, X., Yang, F., **Siva Subramanian, S**., Xu, Q., Feng, Z., Mavrouli, O., et al., 2019. *Prediction of a multi-hazard chain by an integrated numerical simulation approach: the Baige landslide, Jinsha River, China*. ***Landslides.*** https://doi.org/10.1007/s10346-019-01313-5
19. Fan, X., Xu, Q., Liu, J., **Siva Subramanian, S.,** He, C., et al., 2019. *Successful early warning and emergency response of a disastrous rockslide in Guizhou province, China*. ***Landslides***. https://doi.org/10.1007/s10346-019-01269-6
20. Wang, F., Fan, X., Yunus, A. P., **Siva Subramanian, S.,** Alonso-Rodriguez, A., Dai, L., et al. 2019. *Coseismic landslides triggered by the 2018 Hokkaido, Japan (M_w 6.6), earthquake: spatial distribution, controlling factors, and possible failure mechanism.* ***Landslides****,* 16(8), 1551-1566. https://doi.org/10.1007/s10346-019-01187-7
21. Fan, X., Xu, Q., Alonso-Rodriguez, A., **Siva Subramanian, S.,** Li, W., Zheng, G., et al. 2019. *Successive landsliding and damming of the Jinsha River in eastern Tibet, China: prime investigation, early warning, and emergency response*. ***Landslides***. https://doi.org/10.1007/s10346-019-01159-x
22. **Siva Subramanian, S.,** Ishikawa, T., Tokoro, T. 2018. *An early warning criterion for the prediction of snowmelt induced soil slope failures in seasonal cold regions*. ***Soils and Foundations***. 58(3), 582-601. https://doi.org/10.1016/j.sandf.2018.02.021
23. **Siva Subramanian, S**., Ishikawa, T., Tokoro, T., 2017. *Stability assessment approach for soil slopes in seasonal cold regions.* ***Engineering Geology***. 221(1), 154-169. https://doi.org/10.1016/j.enggeo.2017.03.008
24. Porathur, J.L., **Siva Subramanian, S.,** Verma, C.P., Jhanwar, J.C., Pal Roy, P., 2014. *Slope stability assessment approach for multiple seams Highwall Mining extractions*. ***International Journal of Rock Mechanics and Mining Sciences.*** 70, 444–449. http://dx.doi.org/10.1016/j.ijrmms.2014.04.023
25. **Siva Subramanian, S.,** Porathur, J.L., Agarwal, H., 2014. *Impact of earthquake on mining slopes-a numerical approach*. ***Arabian Journal of Geosciences.*** 7, 5193–5208. http://dx.doi.org/10.1007/s12517-013-1144-6

International conferences [In Reverse Chronological Order]

1. **Siva Subramanian, S**., Srivastava, P., Sen, S., & Yunus, A. P. (2023, May). Physically-based model derived thresholds of sediment disasters for impact-based rainfall forecasts. In EGU General Assembly Conference Abstracts (pp. EGU-8674). https://doi.org/10.5194/egusphere-egu23-8674

2. **Siva Subramanian, S**., Sen, S., & Yunus, A. P. (2023, May). Applicability of complex rainfall thresholds for Territorial Landslide Early Warning Systems (Te-LEWS) in the Himalayas. In EGU General Assembly Conference Abstracts (pp. EGU-16763). https://doi.org/10.5194/egusphere-egu23-16763
3. Vashistha, A., **Siva Subramanian, S.,** & Das, J. (2023, May). Co-seismic landslide damming in the Indian Himalayas. In EGU General Assembly Conference Abstracts (pp. EGU-11125). https://doi.org/10.5194/egusphere-egu23-11125
4. Dewrari, M., & Subramanian, S. S. (2023). Correlating grain-size distributions, transport mechanism, and runout distance of debris flow deposits in the Himalayas (No. EGU23-13031). Copernicus Meetings. https://doi.org/10.5194/egusphere-egu23-13031
5. Dewrari, M., Zhu, Y., & **Siva Subramanian, S.** (2022, December). *Numerical Model Based Correlation of Rainfall Intensity-Duration Thresholds of Landslides with Velocities from Seismological Monitoring*. ***In Fall Meeting 2022. AGU***.
6. **Siva Subramanian, S**., Srivastava, P., & Sen, S. (2022). *Numerical weather prediction model outputs define intensity-duration thresholds of extreme-precipitation-induced sediment disasters* (No. EGU22-7804). Copernicus Meetings. ***EGU General Assembly 2022*** https://doi.org/10.5194/egusphere-egu22-7804
7. **Siva Subramanian, S.,** Dave, R., & Bhatia, U. (2021) An Integrated Approach to Analyze Concurrent Debris Flow-Induced Transport Network Failures. ***AGU Fall Meeting 2021***. https://doi.org/10.1002/essoar.10509608.1
8. **Siva Subramanian, S.,** Fan, X., Yunus, Ali. P., van Asch, T., Xu, Q., and Huang, R.*: Envisaging post-earthquake snowmelt-induced shallow landslides under climate change, **EGU General Assembly 2020,*** Online, 4–8 May 2020, EGU2020-12199, https://doi.org/10.5194/egusphereegu2020-12199

Books /Book Chapters [In Reverse Chronological Order]

1. Geotechnics for Transportation Infrastructure Year: 2019, ISBN: 978-981-13-6700-7 Tatsuya Ishikawa, **Siva Subramanian, S.,**, Tetsuya Tokoro | Springer Contribution: Ishikawa T, Siva Subramanian S, Tokoro T 2019 Applicability Evaluation of Slope Disaster Risk Assessment Method in Snowy Cold Regions In Sundaram R, Shahu J, Havanagi V (eds) Geotechnics for Transportation Infrastructure Lecture Notes in Civil Engineering , Pages: 467-498 , Volumes: 28

Supervised Doctoral/Masters Students/Training of Early Career Researchers during the last 5 Years

Name (Degree)	*University, Department*	*Title of the Thesis*	*Status*
Manish Dewrari (Doctoral)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Hillslope debris characterization and modelling of rainfall induced debris slides to improve landslide early warning systems in the Himalayas	Ongoing
Sudhanshu Dixit (Doctoral)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Complexity-based approach to understand the catchment dynamics towards cascading hazards mitigation	Ongoing
Shivani Joshi (Doctoral)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Near real-time rapid risk assessment of earthquake-induced landslides	Ongoing
Anamika Sekar (Doctoral)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Intensity-duration thresholds of rainfall for territorial landslide early warning systems (Te-LEWS) in India	Ongoing
Akshat Vashistha (Doctoral)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Physical vulnerability of roads to landslides	Ongoing
Akshat Vashistha (Masters)	Indian Institute of Technology Roorkee, Centre of Excellence in Disaster Mitigation and Management	Likelihood of earthquake-induced landslide damming in Uttarakhand, India	Completed

Sponsored Research Projects		
Funding Authority	*Title*	*Funding (in INR or Euro)*
Indian Institute of Remote Sensing (IIRS), Indian Space Research Organisation (ISRO)	Development of a prototype territorial early warning system for precipitation-induced sediment disasters (i.e., landslides and debris flows) in India	37,30,790 INR (Total project grant)
Indian Institute of Technology Roorkee	Experimental and process-based multi-scale understanding of the onset, instability, and runout mechanisms of extreme-precipitation induced mass movements	20,00,000 INR (Total project grant)
Department of Science and Technology (DST)	Implementation of Japanese early-warning criteria Soil Water Index (SWI) into TELWs in India for landslide disaster mitigation	13,00,000 INR (Total project grant)

Administrative responsibilities		
Response	*Duration*	*Department/Centre at IITR*
Convenor of Centre Faculty Search Committee (CFSC)	January 2022 to present	Centre of Excellence in Disaster Mitigation and Management
Member of Centre Academic Program Committee (CAPC)	August 2023 to present	Centre of Excellence in Disaster Mitigation and Management
Member of Centre Research Committee (CRC)	August 2023 to present	Centre of Excellence in Disaster Mitigation and Management

Membership in professional societies		
Name of organisation	*Role and Responsibility*	*Duration*
The South Asia Alliance of Disaster Research Institutes (SAADRI)	Co-Coordinator of Working Group -1 Earthquake and Landslide Early Warning System (ELEWS)	November 2021 to present
Indian Geotechnical Society (IGS)	Life member	July 2022 to present
Indian Society Earthquake Technology (ISET)	Life member	July 2023 to present

Events organised /planned		
Name of the event	*Role and Responsibility*	*Duration*
Seminar series Disaster Management Knowledge Frontiers (DMKF)	Coordinator	January 2022 to present
Field Expedition Disaster Management Action Frontiers (DMAF)	Coordinator	October 2022

Courses Taught/Teaching		
Name of the course	*Role and Responsibility*	*Term*
Landslide Hazard Assessment & Mitigation (DMN-505)	Coordinator	Autumn
Application of Geo-spatial data for Disaster Mitigation (DMN-606)	Coordinator	Spring
Natural Hazards and Impact Assessment (DMN-502)	Instructor	Autumn

Professional Background/Experience		
Job Title and Affiliation	*Role and Responsibility*	*Duration*
Assistant Professor, Indian Institute of Technology Roorkee (IITR), Roorkee, Uttarakhand, India	Teaching and Research	October 2021 – Present
Post-Doctoral Fellow, Indian Institute of Technology Gandhinagar (IITGN), Gandhinagar, Gujarat, India	Research	April 2021 – October 2021
Post-Doctoral Researcher, State Key Laboratory of Geohazard Prevention and Geoenvironment Protection (SKLGP), Chengdu University of Technology (CDUT), Chengdu, Sichuan, China	Research	Sep 2018 – Feb 2021
Post-Doctoral Researcher, Faculty of Engineering, Hokkaido University, Sapporo, Japan	Research	Oct 2017 – March 2018
Project Assistant-1, CSIR – Central Institute of Mining and Fuel Research (CIMFR), Regional Center, Nagpur, India	Research	Jan 2013 – Sep 2014

Selected Scientific Contributions
A novel spatially distributed numerical model for precipitation-induced landslides.
A novel model to analyse triggering of debris flows considering initial soil moisture.
Early warning criterion and stability assessment approach for shallow slopes in seasonal cold regions.
Designing of highwall mining pit slopes using a novel 3D slope stability assessment approach.
Designing of open-pit slopes for mines in earthquake-prone regions.

Honours and Awards	
Ministry of Education, Culture, Sports, Science and Technology, Japan Monbukagakusho (MEXT) scholarship for pursuing Dr. Eng.	*2014*
Chinese Academy of Sciences, Beijing, China Best presentation award for young scientist in Silk Road Disaster Mitigation Event.	2019

Declaration

The information provided here is true to the best of my knowledge.

S. Srikrishnan

S. SRIKRISHNAN.