

**Dr. Ratan Das**

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**Broad Areas of Research**

Engineering Geology, Rock Mechanics, Tunnelling, and Numerical Modelling (FEM/DEM).

**Teaching Interest**

Engineering Geology, Rock Mechanics, Structural Geology, Geotechnical Engineering, etc.

**Education**

**Post-Doctoral Fellow**, Department of Geology and Geophysics, **IIT Kharagpur**, (17 March 2020 - 12 July 2021)

Mentor: **Prof. Arindam Basu**, (Research Area: **Engineering Geology**)

**Ph.D. (Engineering Geology) Course Work (9.4/10)** Department of Earth Sciences, **IIT Bombay**, February 2019  
(**Thesis Title:** Stress and Deformational Behavior of Weak Jointed Rockmass during Tunnelling)

Ph.D. Supervisor: **Prof. Trilok Nath Singh**

**M.Sc. (Applied Geology) – First Class (8.11/10)**, Department of Earth Sciences, **IIT Bombay**, 2015

M.Sc. Dissertation supervisor: **Prof. Trilok Nath Singh**, (Specialization: **Engineering Geology**)

**B.Sc. (Hons. in Geology) – First Class (71.90) with Distinction** with pass course Physics and Mathematics:  
Department of Geology, Cotton College, **Gauhati University**, 2013

**12<sup>th</sup> (Science) – First Class (65.20)** with English, Mathematics, Physics, Chemistry, Computer Science, Assamese:  
Oil India Higher Secondary School, Duliajan, **Assam Higher Secondary Education Council (AHSEC)**, 2010

**10<sup>th</sup> – First Class (65.83)** with English, Mathematics, General Science, Social Science, Assamese, Hindi:  
Duliajan Ucha Vidyalaya, Duliajan, **Secondary Education Board of Assam (SEBA)**, 2008

**Editorships**

- **Guest Editor**, Special Issue in **Environmental Earth Sciences (Springer) (IF: 2.784)**

**Awards and Achievements**

- Cleared **Joint CSIR-UGC NET** in **June 2020**.
- Recipient of **TWO** recognition certificate for outstanding contribution for Reviewing in “Journal of Rock Mechanics and Geotechnical Engineering” (**JRMGE**) for September and October 2017.
- Cleared **IIT - JAM**, 2013, **ISM** 2013, and **IIT GATE GG 2015 to 2021**.
- Cleared **APSC Assistant Geologist** written examination 2018.
- Cleared **UPSC Assistant Geologist** written examination 2015.
- Recipient of “Chief Minister's Scheme for **Financial Assistance** to Meritorious Student of Assam” for qualifying IIT-JAM Entrance Examination for the Year 2013.
- Recipient of “**Anundoram Borooh Award**” and “**Amul Vidyashree Award**” for excellent academic performance in Matriculation 2008.

### **Teaching Experience**

**Assistant Professor**, Department of Earth Science, Assam University, Silchar, Assam (14<sup>th</sup> July 2021 - Till now)  
**Guest Assistant Professor**, Department of Geology, Rajiv Gandhi University, Itanagar (14<sup>th</sup> Sept 2018 – 13<sup>th</sup> March 2020)  
**Teaching Assistant**, Department of Earth Sciences, IIT Bombay, Powai (16<sup>th</sup> July 2015 – 27<sup>th</sup> June 2018)

### **Publications in International Journals**

(<https://scholar.google.co.in/citations?user=nxoLeb8AAAAJ&hl=en>)

1. **Das, R.**, Phukon, P., Singh, T.N., **2021**. Understanding the cause and effect relationship of debris slides in Papumpare district, Arunachal Himalaya, India. **Natural Hazards**. doi: 10.1007/s11069-021-05010-2 [ISSN / eISSN: 0921-030X / 1573-0840], [Impact factor: 3.102], Springer Nature  
<https://doi.org/10.1007/s11069-021-05010-2>
2. **Das, R.**, Dhouchak, R, Singh, T.N., **2021**. Analysis and prediction of brittle failure in rock blocks having a circular tunnel under uniaxial compression using acoustic Emission technique: laboratory testing and numerical simulation. **International Journal of Geo-Engineering**. 12, 14. doi: 10.1186/s40703-020-00136-x [ISSN / eISSN: 2092-9196 / 2198-2783], Springer Nature  
<https://doi.org/10.1186/s40703-020-00136-x>
3. **Das, R.**, Singh, T.N., **2020**. Effect of Closely Spaced, Non-Persistent Ubiquitous Joint on Tunnel Boundary Deformation: A Case Study from Himachal Himalaya. **Geotechnical and Geological Engineering**. 39, 2447-2459. doi: 10.1007/s10706-020-01637-3, [ISSN / eISSN: 0960-3182 / 1573-1529], Springer Nature  
<https://doi.org/10.1007/s10706-020-01637-3>
4. **Das, R.**, Singh, T.N., **2020**. Effect of Rock Bolt Support Mechanism on Tunnel Deformation in Jointed Rockmass: A Numerical Approach. **Underground Space**. 6, 409-420. doi: 10.1016/j.undsp.2020.06.001, [ISSN / eISSN: 2096-2754 / 2467-9674], [Impact factor: 2.824], Elsevier B.V.  
<https://doi.org/10.1016/j.undsp.2020.06.001>
5. Panthee, S., Singh, P.K., Kainthola, A., **Das, R.**, Singh, T.N., **2018**. Comparative study of the deformation modulus of rock mass - a reply to the comments received from Gokceoglu (2018). **Bulletin of Engineering Geology and the Environment**. 77, 763–766. doi: 10.1007/s10064-018-1272-z, [ISSN / eISSN: 1435-9529 / 1435-9537], [Impact factor: 4.298], Springer Nature  
<https://doi.org/10.1007/s10064-018-1272-z>
6. **Das, R.**, Singh, P.K., Kainthola, A., Panthee, S., Singh, T.N., **2017**. Numerical analysis of surface subsidence in asymmetric parallel highway tunnels. **Journal of Rock Mechanics and Geotechnical Engineering**. 9, 170–179. doi: 10.1016/j.jrmge.2016.11.009, [ISSN / eISSN: 1674-7755 / 2589-0417], [Impact factor: 4.338], Elsevier B.V.  
<https://doi.org/10.1016/j.jrmge.2016.11.009>
7. Guha Roy, D., Singh, T.N., Kodikara, J., **Das, R.**, **2017**. Effect of Water Saturation on the Fracture and Mechanical Properties of Sedimentary Rocks. **Rock Mechanics and Rock Engineering**. 50, 2585–2600. doi:10.1007/s00603-017-1253-8, [ISSN / eISSN: 0723-2632 / 1434-453X], [Impact factor: 6.730], Springer Nature  
<https://doi.org/10.1007/s00603-017-1253-8>
8. Panthee, S., Singh, P.K., Kainthola, A., **Das, R.**, Singh, T.N., **2016**. Comparative study of the deformation modulus of rock mass. **Bulletin of Engineering Geology and the Environment**. 77, 751–760. doi:10.1007/s10064-016-0974-3, [ISSN / eISSN: 1435-9529 / 1435-9537], [Impact factor: 4.298], Springer Nature  
<https://doi.org/10.1007/s10064-016-0974-3>

### Full Articles in International Conferences

1. Prasad S., **Das, R.**, Singh, T.N., 2018. Estimation of Rock Bolt Length for a Tunnel by Numerical Modeling: A Case Study in Himalayas, Arunachal Pradesh, India, in: **ISRM International Symposium - 10th Asian Rock Mechanics Symposium, ARMS 2018. OnePetro, Z. Zhao, Y. Zhou, J. Shang (Eds)** 29 October - 3 November - 2018, Singapore. [ISBN: 978-981-11-9003-2]  
<https://onepetro.org/ISRMARMS/proceedings/ARMS1018/All-ARMS1018/ISRM-ARMS10-2018-159/43325>
2. **Das, R.**, Sharma, K.M., Singh, T.N., 2018. Physical and Numerical Model to Investigate Shallow Tunnel Instabilities in Loose Soil, in: **International Conference on Geo-Mechanics, Geo-Energy and Geo-Resources – IC3G 2018**, Sichuan University, Chengdu, China.
3. Prasad, S., **Das, R.**, Singh, T.N., Prasad, R., 2018. Geological and Geotechnical Problems Encountered during Construction of Butterfly Valve Chamber and Penstock Assembly Chamber of Tehri Pumped Storage Plant, in: **International Conference on Geo-Mechanics, Geo-Energy and Geo-Resources – IC3G 2018**, Sichuan University, Chengdu, China.
4. Prasad, S., **Das, R.**, Singh, T.N., Prasad, R., 2018. Assessment Causes of Overbreak and Control Measures In Underground Tunnel during Construction - A Case Study from Central Himalayas (HP), in: **International Conference on Geo-Mechanics, Geo-Energy and Geo-Resources – IC3G 2018**, Sichuan University, Chengdu, China.
5. **Das, R.**, Sirdesai, N.N., Singh, T.N., 2017. Analysis of Deformational Behavior of Circular Underground Opening in Soft Ground Using Three-Dimensional Physical Model, in: **American Rock Mechanics Association (ARMA) 2017, 51st US Rock Mechanics / Geomechanics Symposium (5 VOLS)**. San Francisco, California, USA. [ISBN: 978-15-1085-7582]  
<https://onepetro.org/ARMAUSRMS/proceedings/ARMA17/All-ARMA17/ARMA-2017-0172/124188>
6. Singh, P.K., **Das, R.**, Singh, K.K., Singh, T.N., 2016. Landslide in fractured and stratified rocks - A case from Aizawl, Mizoram, India, in: Proceedings of the Conference on **Recent Advances in Rock Engineering (RARE 2016)**, Bengaluru, India. Atlantis Press, Paris, France, pp. 189–194. doi:10.2991/rare-16.2016.59, [ISBN: 978-94-6252-2]  
<https://www.atlantis-press.com/proceedings/rare-16/25864904>

### Full Articles in National Conferences

1. **Das, R.**, Singh, T.N., 2017. Numerical Modelling of Horseshoe Shaped Tunnel to Analyse the Extent and Effect of Disturbed Zone in Jointed Rockmass under Variable Joint spacing, in: **INDOROCK 2017: 7th Indian Rock Conference**. New Delhi, pp. 325–335.
2. **Das, R.**, Singh, P.K., Kainthola, A., Singh, T.N., 2016. Deformational Behavior of Jointed Rockmass during Tunnelling and Determination of Support System Using Finite Element Method, in: **INDOROCK 2016: 6th Indian Rock Conference**. pp. 314–333.

### Selected Seminars/Conferences Attended

1. **INDOROCK 2017: 7th Indian Rock Conference**, New Delhi, India, ISRM TT, 25-27<sup>th</sup> Oct 2017
2. **ARMA 2017: 51<sup>st</sup> US Rock Mechanics/Geomechanics Symposium**, San Francisco, California, USA, 25-28<sup>th</sup> Jun 2017
3. **ISRM, Recent Advances in Rock Engineering (RARE-2016)** Bengaluru, India, ISRM, 16-18<sup>th</sup> Nov 2016
4. **INDOROCK 2016: 6th Indian Rock Conference**, Mumbai, India, ISRM TT, 17-18<sup>th</sup> Jun 2016

### Technical Skills

**Programming Skills:** C, C++, Python, MATLAB

**Simulations and Software:** ITASCA Software Suite, COMSOL Multiphysics, Abaqus, RocScience Suite, Georient, PLAXIS, ArcGIS, Adobe Illustrator etc.

**Proficiency in Geotechnical Tests:** Universal Testing Machine (UCS, Shear, Tensile and Elastic Properties of rocks), Triaxial Testing Apparatus (Shear Strength Parameters), Ultrasonic Wave Velocity Test (PUNDIT Lab), Petrographic Microscopy, Slake Durability Test, Schmidt Hammer, Point Load Test, Average Grain Size Analysis (using Sigma-Pro software), etc.

### **As a Reviewer**

*Environmental Earth Sciences (Springer)*

*International Journal of Geo-Engineering (Springer)*

*Geotechnical and Geological Engineering (Springer)*

*Geomatics, Natural Hazards and Risk (Taylor & Francis)*

*Journal of Rock Mechanics and Geotechnical Engineering (Elsevier)*

*Journal of Asian Architecture and Building Engineering (Taylor & Francis)*

*Himalayan Geology Journal (Wadia Institute of Himalayan Geology, Dehradun)*

*International Journal of Physical Modelling in Geotechnics (Institution of Civil Engineers, ICE)*

### **Member – Professional Body**

#### **Name**

Society of Petroleum Engineers (SPE)

American Rock Mechanics Association (ARMA)

American Association of Petroleum Geologists (AAPG)

Indian Society for Rock Mechanics and Tunneling Technology (ISRMTT)

### **Position of Responsibilities**

1. **Coordinator:** Remedial Coaching Center, Department of Earth Science, Assam University.

### **Personal Details**

Date of Birth	12 November 1991
Nationality	Indian
Permanent Address	S/O, Hiran Devi Das, House No. 583 No.2 Goreswar, Vill: Goreswar, Dist.: Baksa, Assam-781366, India
Correspondence Address	Dr. Ratan Das Department of Earth Science, Assam University Silchar, Dist.: Cachar, Assam-788011, India