Sreya Dhar

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Education

- **Master of Science**, Inst. Of Comp. & Data Sciences, University at Buffalo, SUNY, 2020-2021(CGPA 3.9/4).
- **Doctor of Philosophy**, Dept. of Civil & Env. Engg., Indian Institute of Technology Guwahati, 2012–2018
- **Bachelor of Engineering** with First Class Honours, Jadavpur University, India, 2008–2012. (CGPA 8.51/10)

Project

- SCC-PG: Towards cybernetic buildings: integrated intelligent sensing to create responsive environments. NSF Award Number:1951952; Principal Investigator: Junsong Yuan; Organization: SUNY at Buffalo; NSF Organization: CNS Start Date:10/01/2020 (Ongoing).
- Grouping or clustering the private/public universities for the College dataset by clustering algorithms (k-means, hierarchical) and graphical models (like self-organizing maps, hierarchical random graphs) as an unsupervised learning problem.
- Created and evaluated a movie database from scratch in PostgreSQL, maintaining all its integrity constraints among different relations in DBMS.
- Image classification by Multi-layers perceptron method implemented in a deep neural network. A comparative study has been carried out by tuning different hyper-parameters like #of hidden layers/neurons, regularization parameters, and activation functions.
- Analyzing a fire facility dataset collected from all over the USA by National Park Service's Fire and Aviation Management program to predict score against fire hazards for different building facilities with EDA, visualization, and appropriate ML algorithms as a multiclass classification problem.
- The AI-based comparative study analyzes bridge response from dynamic time history analysis to predict underlying foundation soil type by supervised machine learning algorithms.

Experience

- **University of California Los Angeles**: Visiting Assistant Project Scientist (Feb 2020 – Dec 2020). Worked on the seismic analysis of structures, soil-structure interaction, ground motions, fragility analysis.
- **Caltech Archive**: Archivist (Volunteer) (Aug 2018 – Jul 2020). (a) *The mind's eye: Richard Feynman in Word and Image*: Museum volunteer, (b) Archivist: Collating and redacting information, speech transformation, and transcription/editing of interviews.
- **Politecnico di Milano, Italy:** Erasmus Mundus Fellow (Sept 2014 – May 2017). Topic: Influence of Soil-Structure Interaction on Seismic Behavior of RC Integral Bridge.
- **IIT Guwahati, India**: Undergraduate Researcher (June – July 2011). Design of a Reinforced Concrete Multistoried Building due to Wind Load and Earthquake Load Combinations.
- **IIT Kharagpur**, **India**: Undergraduate Researcher (May– June 2010). Analysis of Stability of Secondary Apron under Barrages by Experimental and Numerical Methods.

Award/Honours

- **Fellowship from European Union for INTERWEAVE Project**, *Erasmus Mundus Partnership Asia-Europe,* Erasmus Mundus Program (Sept 2014 – Jun 2017).
- **MHRD Scholarship** from Govt. of India for Ph.D. (July 2012 – July 2017)
- **First prize** in paper presentation at "*3rd Inter Engineering College Academic Meet 2012*" organized by Forum of Scientists, Engineers, and Technologists (FOSET), Mar 2012.
- **First prize** in paper presentation at "*Academic Meet 2011*" organized by FOSET, March 2011.
- **Scholarship from Govt. of India** by 'National Scholarship for Higher Education' (2008–2012)

Computational Skill

- *Programming Language:* Python, R, SQL, PostgreSQL, Tensorflow, Keras, PyTorch, Julia, C.
- *Data Analyzing Software:* Tableau, SAS, Origin Pro, QGIS, SeismoSignal
- *Mathematical Tool:* MATLAB, Mathematica
- *Computational Programs:* Abaqus, CSi Bridge, AUTOCAD, STAAD PRO, Ansys
- *Operating System*: WINDOWS, Linux, macOS
- *Documentation Package:* Microsoft Office, Adobe packages, Latex

Relevant Courses/Course Work

- **University at Buffalo, SUNY**: Statistical Data Mining, Machine Learning, Numerical Maths, and Computing, Database Modelling & Query Language, Probability theory and Statistics, Programming and Database for Data Scientists.
- **Practical Machine Learning, Statistical Inference, Regression Models** by Johns Hopkins University on Coursera. Certificate earned on Apr 2020.
- **Machine Learning** by Stanford University on Coursera. Certificate earned on Mar 2019.

Teaching Experience

- Teaching Assistant: July 2012 – June 2017 and supervised in UG/PG courses,
- Grader for UG/PG semester answer scripts,
- Exam Invigilator

Professional Service:: Journal Reviewer

- Engineering Structures, Elsevier [Impact Factor (2019): 3.548]
- Journal of Earthquake Engineering, Taylor & Francis [Impact Factor (2019): 2.779]

Publications

- Dhar, S. (2020), "AI based Foundation Soil Identification of an Integral Bridge.", in *Journal of Earthquake Engineering*. (under review)
- Dhar, S., Özcebe, A.G., Dasgupta, K., Petrini, L., & Paolucci, R. (2019), "Different approaches for numerical modeling of seismic soil-structure interaction: impacts on the seismic response of a simplified reinforced concrete integral bridge", in *Earthquake and Structures,* **17**(4):373-385.
- Dhar, S. & Dasgupta, K. (2019), "Seismic soil-structure interaction of Integral abutment bridges: A review", in *Transportation Infrastructure Geotechnology,* **6**(4):249-267
- Dhar, S., & Dasgupta, K. (2019), "Comparison between two modelling aspects to investigate seismic soil structure interaction in a jointless bridge", *Advanced Topics in Structural Vibration,* Springer Nature (In Press).
- Dhar, S. & Dasgupta, K. (2019), "Comparison of modal behaviour of integral abutment bridge with and without soil structure interaction", in *Recent Advances in Structural Engineering, Volume 2,* Chapter 21. Springer Nature.
- Dhar, S. & Dasgupta K. (2012), "Parametric Study of Lateral Load Resisting System in Reinforced Concrete Frame Building", Book Chapter in *Proceedings of International Symposium on Engineering under Uncertainty: Safety Assessment and Management (ISEUSAM – 2012)*. DOI 10.1007/978-81-322-0757-3_49.
- Dhar, S. & Dasgupta, K. (2019), "Seismic Analysis of an Integral Bridge with Retrofitted RC Pile Foundation in Different Foundation Soils using Simplified SSI", In *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions: Proceedings of the 7th International Conference on Earthquake Geotechnical Engineering,(ICEGE 2019),* June 17-20, 2019, Rome, Italy (p. 2111). CRC Press.
- Dhar, S. & Dasgupta, K. (2018), "Parametric Study on dynamic Behaviour of RC Integral Bridge Incorporating Simplified SSI", In *11th National Conference on Earthquake Engineering (11NCEE)*, Paper no. 1188, June 2018, Los Angeles, CA.
- Dhar, S., Özcebe, A.G., Dasgupta, K., Dey, A., Paolucci, R. & Petrini, L. (2016), "Nonlinear Dynamic Soil-Structure Interaction Effects on the Seismic Response of a Pile-Supported Integral Bridge Structure", In *6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*. Paper No. 141, New Delhi, India.

Other Activities/Skills

- Volunteer at CaltechY for *Kids Reading for Success,* Dec 2019 –Jul 2020.
- Volunteer in *Engineering Mechanics Institute Conference*, Caltech, June 2019.
- Volunteer in 49th Inter IIT Sports Meet and 21st Inter IIT Stuff Meet, Guwahati, Dec 2013.
- Volunteer in *7th National Frontier of Engineering Symposium* (NatFoE), IIT Guwahati, Oct 2012.
- Participation in the "*National Service Scheme*" at Jadavpur University, Salt Lake Campus, Feb 2010.
- "The Youth-Exchange Project with Asia-Oceania and North America (**Kizuna (bond) Project**)" by Japan International Cooperation Center (JICE), Feb 2013, Japan.
- *"*Megalith*",* Department of Civil Engineering, IIT Kharagpur, Dec 2009.