Sharan Balasubramanian
National Institute of Technology Tiruchirappalli

sharanb02@gmail.com / 103119101@nitt.edu, Phone: +91-9843518180

EDUCATION

National Institute of Technology Tiruchirappalli
Bachelor of Technology in Civil Engineering (July 2023)   *CGPA: 8.0/10.0*

The Velammal International School, Chennai
AISSCE Grade-12, CBSE (May 2019)   *Percentage: 93.80%*

Vidyapeetam Sr. Sec. School, Sholinghur
AISSE Grade-10, CBSE (May 2017)   *CGPA: 10.0/10.0*

RESEARCH EXPERIENCE

Uncertainty Quantification for correlated inputs
Guide: Dr. Greegar George, Assistant Professor, Dept. of Civil Engineering, NIT Tiruchirappalli
Jan 2021 – Present

- This research work aims to address the topic of sensitivity analysis for models with correlated inputs. For instance, Material properties in structural systems are likely to be correlated. In such cases, traditional methods like Sobol analysis can't accurately identify the essential variables, as it doesn't account for the correlation between input variables.
- Hence, this project aims to model a sensitivity estimate that can separately quantify the variable uncertainty and the uncertainty due to correlation between input variables.

ICESat and ICESat-2 Laser Altimetry data over the Himalayas
Guide: Dr. Balaji Devaraju, Assistant Professor, Dept. of Civil Engineering, IIT Kanpur
June 2021 – August 2021

- The project was an experimental work to become acquainted with ICESat and ICESat-2 laser altimetry data (HDF5 format) and handle large-scale satellite data using NASA's APIs.
- Created a toolbox that would generate 3-month land ice snapshots over the four Himalayan Regions (viz. Karakoram, East, West, and Central Himalayas)
- Automated data download for ICESat-2 to some extent using the 'icepyx' open-source package. Learned to plot and modify shapefiles using 'shapely' and 'geopandas' libraries. Also plotted across tracks slopes for the three beam pairs of the ATLAS instrument.

INDIVIDUAL PROJECTS

Population Forecasting in Excel sheet: Implemented population forecasting methods like Arithmetic increase, geometric increase, incremental increase, graphical, etc., in excel sheet

FE Analysis of the Simply supported beam in MATLAB: Modeled a SS Beam using the 2D FEM Beam element in MATLAB. The code returns beam displacements along its length.

ACADEMIC ACHEIVEMENT

- Ranked within the top 2% of candidates, in the NEST 2019 examination for admission into integrated research programmes offered under Dept. of Atomic Energy, India.

SKILLS, COURSES, AND CERTIFICATIONS

- **Technical Skills:** Python, MATLAB, Mathematica, STAAD.Pro, AutoCAD, LaTeX, C++
- **Courses:** Probability and Numerical Techniques, Finite Element Method, Elementary Structural Dynamics (Ongoing), Optimization in Engineering Design (Ongoing)
- **Certifications:**
  o Workshop on Software for Mathematics and Statistics (by Dept. of Mathematics, NIT Tiruchirappalli)
  o Structural Reliability Engineering (Ongoing, NPTEL Online by IIT Kharagpur)
- **Research Interests:** Structural Dynamics, Probabilistic Analysis, Finite Element Modelling and Analysis, Structural Reliability

EXTRA-CURRICULAR ACTIVITIES

Club Activities:

- *Ignitte, the teaching club of NIT Tiruchirappalli:* Ignitte aims to guide students from the economically backward sections of the society into India's premier educational institutions through coaching and mentoring. As a part of the club's 'Impulse' initiative, I have coached and mentored several government school students for the Joint Entrance Examination (JEE). Along with my team, I have organized career guidance sessions and created information brochures on various career paths after high school.

- *National Service Scheme (NSS), NIT Tiruchirappalli:* NSS NIT Tiruchirappalli is the local chapter of the nationwide NSS scheme. As an executive member, I was responsible for gathering NSS volunteers and the smooth happening of the NSS weekly activities. I was an integral part of the 'Anti-one-time use plastic' awareness session's organizing team, recognized as India's largest one-day awareness session by 'The Indian Book of Records' organization.

- *Social Council, NIT Tiruchirappalli:* Social Council is a student body that streamlines and monitors all the social activities of the institute. For 'Humanitty,' the annual philanthropic event of NIT Tiruchirappalli, we raise funds and donate essential commodities to nursing homes and orphanages to celebrate the joy of giving.

Sports and Cultural Activities:

- Awarded with the Rajapuraskar award for completion and participation in the districtwide 'Scouts and Guides camp' conducted at the end of 10th grade.
- Won first place in an extempore speech competition held during ENGLANG'18 conducted by the Tiruvannamalai Vellore Sahodaya Schools Cluster (TVSSC).
- Runners up in the intra-school shotput throw held during the Annual Sports Day 2017.
- Awarded and appreciated for active participation in the General Assembly events, including stand-up comedy, quizzes, and on-the-spot speech during High School.