Indranil Mandal

Linkedin: *www.linkedin.com/in/i-m1998/*
Location: Kolkata, West Bengal

Email : *indranil8017@gmail.com*
Mobile : +91-7076-598-886

EDUCATION

- **Indian Institute of Engineering Science and Technology, Shibpur** — Howrah, West Bengal
  M.Tech in Transportation Engineering under B.Tech-M.Tech Dual Degree ; *CGPA: 8.55/10.0* — *2022 - 2023*
  Key Courses Taken: Intelligent Transportation Systems, Traffic System Design and Management, Traffic Engineering, Transportation Planning

- **Indian Institute of Engineering Science and Technology, Shibpur** — Howrah, West Bengal
  B.Tech in Civil Engineering under B.Tech-M.Tech Dual Degree ; *CGPA: 7.39/10.0* — *2018 - 2022*
  Key Courses Taken: Transportation Engineering, Advanced Numerical Methods and Computing, Geo-technical Engineering.

- **Bhagabandh High School** — Purulia, West Bengal
  Higher Secondary Examination ; *Percentage: 71%* — *2017*
  Key Courses Taken: Physics, Chemistry, Mathematics

- **Bhagabandh High School** — Purulia, West Bengal
  Secondary Examination ; *Percentage: 81%* — *2014*

WORK EXPERIENCE

- **Project Associate - Indian Institute of Technology, Roorkee** — Jan 2025 - Ongoing
  - Working on developing warrants for segregated traffic lanes to enhance the safety of motorized two-wheelers by analyzing traffic flow, accident data, and road conditions. This research aims to establish guidelines for the effective implementation of dedicated lanes, reducing conflicts with larger vehicles and improving overall road safety.

PROJECTS & THESIS

- **Modeling semi-urban commuters' mode choice using discrete choice, ML, and DL techniques.** — 2024-2025
  - Collected data from semi urban location. Data cleaned and processed for prediction. Compared **multi-nomial logit model**, **machine learning** and **deep learning techniques** for prediction of mode choices.

- **Effects of Weather on Commuters' Mode Choice Perception** — 2022-2024
  - Studied and predicted mode choice behavior of commuters' of multiple categories using **Analytical Hierarchical Process**, **Multi Criteria Decision Analysis** on **R programming language**.
  - Collected perception data using questionnaire survey in sub-urban areas inside and outside vehicle.

- **Sensitivity Analysis of Side Friction of Traffic Composition on Traffic Flow Model** — 2022-2024
  - Performed **recognition survey** in suburban areas to find the **friction index** of the road side with various traffic composition.
  - Used complex models to describe actual field conditions (speed-density graphs) and found **Del-Castillo models** suitable considering all parameters.

- **Route choice modeling in Kolkata using MCDA-CRITIC for objective criteria weighting.** — 2023-2024
  - Route choice modeling in suburban Kolkata using the MCDA (Multi-Criteria Decision Analysis) CRITIC (Criteria Importance Through Intercriteria Correlation) technique is an interesting approach. The CRITIC method helps in determining the weights of different criteria objectively by considering both the contrast intensity and the conflict between them.

- **Effects of E-Rickshaws on Traffic Mobility and Near Road Air Quality - M.Tech Thesis** — 2023
  - Studied the impact of e rickshaw on traffic mobility using **video photographic technique** and traffic induced air quality monitor.
  - Studied the impact of **air quality based on various platoon lengths** using collected traffic and air quality parameters (NOx, SOx, etc.).
  - Optimization of e-rickshaw operations towards better mobility and improve air quality on roads passing through urban fringe areas using **Genetic Algorithm on MatLab**.
  - Performed mode choice modeling utilizing **nested logit models** through the application of **N-Logit** software.

- **Non-Conventional Materials Use In Pavement Construction - Mini Project** — 2020
  - Case study about different materials used for development of pavement constructions.

Skills & Algorithms

- **Softwares**: N-Logit, SPSS, PTV Vissim, IIT PAVE, MATLAB, Global Mapper MatLab, C Programming, Auto CAD, QGIS, Python, Sewer Gems, Flow Master, Microsoft Excel, MS Word, MS Powerpoint, Global Mapper, Google Earth Pro, Civil 3D
- **Algorithms**: CRITIC, TOPSIS, AHP, Genetic Algorithm, Discrete Choice Models, Game Theory, Mode Choice using Artificial Neural Network, Decision Tree, Random Forest, Support Vector Machine, Factor Analysis, Structure Equation Modeling, Path Analysis

Internship

- **Vocational Training - Public Works Directorate, Govt. of West Bengal** 2019
  - Monitored concrete mix proportions and reinforcements of column and staircase with structural drawings.

Workshop

- **Traffic Flow Dynamics: Data, Models & Methods - Organized by IIT Kanpur** Oct 2024

Positions of Responsibility

- **Treasurer of SOCCE (Society of Civil Engineers)** 2022 - 2023
- **Year Representative of Dual-Degree final year students** 2022 - 2023

Achievements

- **Qualified GATE-2022 in Civil Engineering Paper (CE)**