Ganesh Kumar Manyam

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Highlights of Skills & Qualifications

- Specialized in Transportation Engineering & Planning with two years of hands-on experience in Mass Rapid Transit systems.
- Proficient in Data Analytics using Python, R, TensorFlow Keras and MATLAB.
- Conducted economic research using GPT-4 API and ArcGIS.
- Led significant projects in traffic systems modelling and sentiment analysis.
- Skilled in Python, Aimsun, SUMO, Massmotion, Vissim, ArcGIS, AutoCAD & Civil 3D

Education

University of Toronto *Toronto, Canada*

Master of Engineering (MEng) in Civil Engineering *Jan 2022 - Dec 2023*

- **Dual Emphasis in Transportation Engineering & Planning and Data Analytics**
- CGPA: 3.7/4
- **Relevant Coursework:** Fundamentals of ITS and Traffic Management, Public Transit Operations and Planning, Transportation & Development, Transportation Demand Analysis, Modelling Transport Emissions, Foundations of Data Analytics and Machine Learning

Jawaharlal Nehru Technological University Hyderabad *Hyderabad, India*

Bachelor of Technology in Civil Engineering *Aug 2015 - May 2019*

- CGPA: 8.55/10. Graduated in First Class
- Awarded the highest merit scholarship for three consecutive years (2016-19) for excellence in academic performance

Professional Experience

KEOLIS *Hyderabad, India*

Civil Engineer - Tracks *July 2019 - Mar 2021*

- Played a key role in track engineering of India's largest Public-Private Partnership (PPP) mass rapid transit project at Hyderabad Metro Rail, focusing on integrating transport modelling and data-driven solutions to enhance system efficiency.
- Collaborated with renowned international teams, including AECOM, Louis Berger, Parsons Brinckerhoff, Halcrow, and Larsen & Toubro Limited, in the certification process of new metro lines at Hyderabad Metro Rail.
- Conducted in-depth data analysis of rail geometry using statistical methods and modeling techniques, optimizing track alignment and performance. This led to a significant 11% reduction in maintenance costs and enhanced safety metrics.
- Pioneered and spearheaded a research initiative on rail corrugation, employing data analytics to decipher patterns and devise effective corrective strategies. This research was instrumental in the development of predictive maintenance models, contributing to the long-term resilience of rail infrastructure.

University of Toronto *Toronto, Canada*

Research Assistant (Prof: Tianyi Wang) *May 2023 - Present*

- Pioneered a sentiment analysis study using the GPT-4 API from OpenAI, applying advanced natural language processing techniques to analyze and quantify McCarthyism's influence on Hollywood. This involved processing large datasets and interpreting complex sentiment metrics.
- Played a key role in multiple economic research projects, where I specialized in data processing using Python. Utilized diverse datasets from primary and secondary sources, applying statistical models to derive actionable insights.
- **Key Technical Skills:** Python with PyTorch, GPT-4 API, NumPy, Matplotlib, Pandas, Html, Scikit-learn, Git.

Projects

Intelligent Traffic Systems and Management Term Project *Toronto, Canada*

University of Toronto - *Prof: Baher Abdulhai* *Sep 2023 - Dec 2023*

- Collaborated in a group of three to design and implement a traffic flow prediction model using artificial neural networks (ANN) with TensorFlow Keras in Aimsun software.
- Applied AI techniques for enhanced traffic management: Utilized neural networks for precise short-term traffic flow predictions.
- Developed an adaptive traffic signal controller applying reinforcement learning (RL) techniques using Ray.RLLib and SUMO.
- Involved in various project stages including traffic network modelling, static and dynamic traffic assignment, signalized intersection control and freeway onramps, simulating intricate traffic flow dynamics.
- **Technical Skills:** Aimsun, SUMO, Python, TensorFlow Keras, Neural Networks, Genetic Algorithms, Reinforcement Learning.

Urban Operations Research Project *Toronto, Canada*

University of Toronto - *Prof: Amer Shalaby* *Sep 2023 - Dec 2023*

- Analyzed and modelled a high-traffic pedestrian queuing system in Finch GO Bus Terminal using MassMotion, focusing on performance enhancement and emergency preparedness.
- Conducted field data collection, applied queuing theory, and developed a base case simulation model to identify and improve system inefficiencies and bottlenecks.
- Tested and recommended service improvements for better Levels of Service (LOS), compliance with fire safety codes (NFPA130), and effective emergency evacuation planning.
- **Technical Skills:** MassMotion, Queuing Theory, in-situ data collection

Transportation and Demand Analysis *Toronto, Canada*

University of Toronto - *Prof: Khandker M. Nurul Habib* *Jan 2023 - Apr 2023*

- Developed ordered probit and binary logit models using Transportation Tomorrow Survey data.
- Employed Python and Biogeme modules for model development.
- Constructed discrete choice models, including multinomial logit and Nested Logit mode choice models, by leveraging a commuting mode choice dataset from TMS
- **Technical Skills:** Python with Biogeme, Transportation and demand analysis, Travel demand forecasting, Transportation planning and policy

Transport Emissions Modelling *Toronto, Canada*

University of Toronto - *Prof: Marianne Hatzopoulou* *May 2023 - Aug 2023*

- Delved into Macro, Meso, and Micro-level transport emission modelling, analyzing traffic-related air pollutants and energy consumption.
- Utilized GIS for spatial analysis of average-speed emissions in Toronto, identifying peak emission zones.
- Evaluated electric vehicle impacts on the grid, highlighting challenges and prospects of EV transition.
- **Technical Skills:** ARCGis, MOVES Model, Emission Modelling, Electric Vehicle Analysis, Model Validation

Toronto Subway Data Analysis *Toronto, Canada*

University of Toronto - *Prof: Sebastian Goodfellow* *Jan 2022 - Apr 2022*

- Collaborated with a team of three graduate students to analyze delays in the Toronto subway system using an open-source dataset
- Employed Python for data cleanup, time-series analysis, and exploratory data analysis, as well as predictive modelling
- Investigated the impact of the COVID-19 pandemic on subway delays, providing valuable insights for potential mitigation strategies
- **Technical Skills:** Python with Pandas, Predictive modeling, Web-Scraping

Skills

Programming	**Python (Pandas, PyTorch, Scikit-learn. etc.), R, SQL, MATLAB, HTML**
Software	**Aimsun, SUMO, Massmotion, Vissim, EMME, ArcGIS, AutoCAD, Tableau, QGIS, Revit, SketchUp, Microsoft Office, Git, Civil-3D**
Soft Skills	Adaptability, Project management, Critical Thinking, Time Management, Teamwork, Problem-solving, Documentation

Achievements

2016-19	**Academic Scholarship**, Awarded annual scholarships in recognition of academic achievements throughout three years of Bachelor's degree.	*India*
2019	**Presented a paper on 'Seismic analysis of double curvature arch dams'**, at Undergraduate Research Symposium, Mahindra University	*India*
2023	**Fundraised more than 10,000 CAD for University of Toronto**, Led a team of students to raise funds for research grants and scholarships at the University of Toronto by networking and engaging with alumni and prospective donors.	*Toronto, Canada*

Interests / Activities

Video Editing	Made animated videos using adobe software suite for an ed-tech startup
3D Modelling	Enjoy creating 3D models using SketchUp and published them in marketplace.

Languages

English	Professional proficiency
French	Beginner proficiency
Telugu	Native proficiency