Personal Information

Name	Dr. G. Prathyusha
Years of experience	Teaching: 2.5 Years Research: 05 Years
Email Id	prathyusha.g@bvrithyderabad.edu.in
Areas of Specialization	Optimization through Goal Programming technique

Educational Qualifications

Doctoral Degree	Ph.D. in Mathematics	Solid Transportation Problem with Uncertain Variables through Goal Programming Technique, **REVA University, Bangalore**.
PG Degree	M.Sc. Mathematics	(Specialization: Systems Theory and Computer Modelling), **JNTUH**.
UG Degree	B.Sc. (Hons) in Mathematics	**Sri Sathya Sai University, Anantapur**.

Papers Published

International Journal Publications

1. **G. Prathyusha**, K.N. Udaya Kumar, and G.A. Vatsala, Multi-goal multi-product fuzzy solid transportation problem via goal programming technique, International Journal of Mathematics in Operational Research, 27(3)(2024), 354-376. https://www.inderscienceonline.com/doi/abs/10.1504/IJMOR.2024.138059.

2. **Prathyusha, G.**, Udaya Kumara, K.N. Vatsala, G.A, "Optimizing Bi-Objective Solid Trans-Portation Problem Using Hierarchical Order Goal Programming Technique: A Case Study Problem", Soft Comput, 28(2024), 271 – 279. https://doi.org/10.1007/s00500-023-09253-y .

3. **Prathyusha G**, Uday Kumar. K. N, Harish Babu. G. A And Praveena Kumar. K. M, "Allocation of Time and Cost in Project Management Problem Through Goal Programming", *Palestine Journal of Mathematics*, Vol.10(Special Issue 1), 75-82, 2021. https://pjm.ppu.edu/paper/838-allocation-time-and-cost-projectmanagementproblem-through-goal-programming

4. **G. Prathyusha**, K.N. Udaya Kumar, and G.A. Vatsala, Fuzzy Solid Transportation Problem via Goal Programming with Linear and Non-Linear Membership Functions, under review process.

5. **G. Prathyusha**, K.N. Udaya Kumar, and G.A. Vatsala, Comparative Study of a Solid Waste Management using Transportation Problem with Goal Programming Technique, under review process.

Other Publications

6. **Prathyusha, G**., Kumara, K. N. U., & Kumara, K. M. P. "A Goal Programming Model for Budgetary Allocation of an IT Organization", *Communications in Mathematics and Applications*, *14*(1), 429–437, 2023. https://doi.org/10.26713/cma.v14i1.1948

7. **G. Prathyusha**, "An Overview of Solid Transportation ProblemInvolving UncertainVariables", under review process.

International Conference Presentations:

1. The analysis of the paper "Allocation of Time and Cost in Project Management Problem through Goal Programming" was presented in **ICRTACM-2020**.
2. The study of the paper "Multi-Goal Multi-Product Fuzzy Solid Transportation Problem Via Goal Programming Technique" was **presented** at **the International Conference on Business Analytics and Intelligence (ICBAI), IISC-Bangalore (Dec 2021)**.
3. The "Comparative Study of a Solid Waste Management Problem using Transportation Problem with Goal Programming Technique – A Case Study Problem" was **presented** at **ICRTACM-2022**.
4. Model for Solving Uncertain Multi-Objective Solid Transportation Problem – **Presented at International Conference on Business Analytics and Intelligence, IISC (Dec 2023)**

Description of the Ph.D. ThesisWork:

This research is dedicated to addressing the complexities of the Solid Transportation Problem (STP), which involves optimizing the transportation of goods while considering factors such as weight, volume, and distance. To tackle this challenge, a novel two-phase approach has been developed.

The first phase centres on creating a mathematical model that utilizes goal programming with linear and non-linear membership functions. This model is designed to effectively manage uncertainties inherent in the STP. To evaluate its performance, the model is applied to real-world scenarios in both logistics and reverse logistics.

Building upon the foundation of the initial model, the second phase involves a rigorous comparative analysis against existing methods. This process aims to identify the strengths, weaknesses, and potential areas for improvement in the proposed model. By benchmarking its performance, the research seeks to establish the model's value proposition and its potential to outperform traditional approaches.

A core aspect of this research is the development of a flexible and adaptable solution capable of handling the diverse challenges presented by the STP. By incorporating fuzzy logic and goal programming, the model can effectively address uncertainty and multiple objectives simultaneously. The practical application of the model to real-world scenarios, such as solid waste management, demonstrates its potential to deliver tangible benefits.

Ultimately, this research contributes to the field by offering a refined and effective framework for tackling the STP under uncertain conditions. The findings and insights generated from this study can inform the development of future transportation and logistics solutions.

Research Interests: Fuzzy Logic

- **Expand Fuzzy Number and Membership Function Applications:**
  - Utilize Interval Type-2 Fuzzy Sets for handling complex uncertainty.
  - Develop adaptive membership functions for dynamic environments.
- **Develop Heuristics for Large-Scale Fuzzy Optimization Problems:**
  - Apply Genetic Algorithms and Particle Swarm Optimization for efficient solutions.

- **Explore Unbalanced Solid Transportation Problems:**
  - Incorporate fuzzy cost functions for holistic decision-making.
  - Model multi-depot scenarios for improved logistics efficiency.

Technical Skills:
- Programming/Data analysis tools: C, Basics of Python and MATLAB
- Simulation Tools: LINGO, LiPS.
- Documentation:LaTeX, MS Office.

Conferences Attended
- International Conference in Mathematics, Acharya Institute of Technology, Bangalore – June 2019.
- International Conference on Recent Advances in Applied Sciences, REVA University,Bangalore – October 2019