Alisson Garcia

PhD Student at UPNA

Alisson is from Ecuador.
Engineer, expert in Transportation.
She's studied in Ecuador and Chile.
Experience:
- University teacher.
- Academic tutor of undergraduate students.
- Technician in transportation, traffic and road safety, working on sustainable transport projects.

Alisson is integrated in the DECYL group (Data, Statistics, Quality and Logistics) within the Statistics and Operation Research Department, under the supervision of Professor Javier Faulin, expert in Operations Research applied to transportation.

Research

Agile algorithms for city logistics and smart mobility of goods and people: a sustainable efficient scope in the urban last mile distribution.

Research objective: to solve transport optimization problems through agile methods such as sim heuristics or biased-randomized procedures.

Abstract:

The rapid growth of population, urban expansion, e-commerce, and the rise of on-demand logistics have created challenges for companies in last-mile merchandise distribution. This surge in demand has resulted in various negative externalities, including traffic congestion, parking violations, and air pollution.

Transport plays a crucial role in the sustainable development of cities, as emphasized by the 2030 Agenda for Sustainable Development by the UN and Spain's commitment to the climate crisis. Smart cities aim to improve the sustainability and quality of urban living by utilizing modern information, technologies, and effective urban governance to manage transportation. In this context, the optimization of last-mile deliveries is crucial not only for companies but also for public administrations that want to guarantee a good quality of life for citizens.

To address these issues, this research work proposed the analysis of strategies that allow solving transport problems in last-mile logistics considering environmental, social, and economic criteria, which are the fundamental pillars for achieving sustainability objectives.

The agile optimization approach, involving parallelized biased random heuristics, offers efficient and real-time solutions to complex decision-making problems, aligning with European strategies for sustainable transport. It is proposed to solve optimization problems through agile methods such as sim heuristics or biased-randomized procedures, carrying out a set of experiments and sensitivity analyses considering alternative distribution processes and the impact of negative externalities derived from transport, new mobility technologies, and electric vehicle fleets.

New paradigms in smart logistics need quick answers to new problems, such as calculating new green distribution routes with electric cars or drones, or updating the delivery procedure of an unmanned aerial vehicle when new distribution protocols have been defined. Providing acceptable good solutions in short computational times is the main characteristic of agile algorithms.

'I would like to learn how to design and operate sustainable transport systems and their impact, to seek solutions to transport problems and needs. There is a great need in my country for the generation of transport projects that promote the achievement of sustainable transport objetives to improve the quality life of citizens`.