

Bryan GALARZA

Antwerp – Belgium

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🔗 Google Scholar • 📄 ResearchGate • 🌐 GitHub • 🌐 Personal page

Career Profile

Research scientist specializing in mathematical modelling and combinatorial optimization of complex systems. My work bridges theory and practice, with a focus on metaheuristics, exact methods, and data-driven approaches to support efficient, practical solutions across domains such as transportation, logistics, and healthcare. I have a proven track record of independent and collaborative research with publications in high-impact journals, software development, and student supervision experience.

⚙️ **Core skills:** *Combinatorial Optimization* | *Transportation Modelling* | *Metaheuristics* | *Mathematical Programming* | *Algorithm Development* | *Coding*

🇧🇪 **Nationality:** Belgian citizen (EU)

Education

University of Antwerp, ANT/OR

Doctor of Philosophy (Ph.D.)

Operations Research

Supervisors: Kenneth Sörensen and Pieter Vansteenwegen

Thesis: Towards the Goldilocks Zone of demand-responsive transportation services [🔗](#)

Antwerp, Belgium

Jun 2019 – May 2023

Ghent University, Industrial Systems Engineering

Master of Science in Engineering Sciences, Cum Laude

Industrial Engineering and Operations Research (burgerlijk ingenieur)

Thesis: Multimodal coordination schemes for Intelligent Traffic Systems [🔗](#)

Ghent, Belgium

Sep 2016 – Jul 2018

Ghent University, Engineering and Architecture

Bachelor of Science in Engineering Sciences

Chemical Engineering and Material Science (burgerlijk ingenieur)

Ghent, Belgium

Sep 2012 – Jul 2016

Sint-Lievenscollege

High-school, general secondary education (ASO)

Science and Mathematics

Antwerp, Belgium

Sep 2005 – Jul 2011

Experience

Department of Engineering Management (ENM) - University of Antwerp

Postdoctoral Researcher

I conduct independent and collaborative research on the STRAUSS project (urban logistics) and healthcare transportation within the Antwerp Operations Research Group (ANT/OR). My responsibilities include:

- Developing mathematical models and optimization algorithms for complex transportation systems.
- Supervising Master thesis students and supporting PhD researchers in their work.
- Preparing and managing research proposals.
- Publishing research findings in peer-reviewed journals and presenting at international conferences.

Antwerp, Belgium

Oct 2025 – Present

VLAIO - Triptomatic

Lead Operations Research Expert

Triptomatic is a software company offering digital solutions in healthcare. I was fully responsible for the Operations Research part of a VLAIO-funded development project (applied research project fund) to automate vehicle dispatching. My tasks included:

- Conducting research on on-demand transportation problems in healthcare and translating them into OR models.
- Designing and implementing real-time (and static) optimization algorithms for vehicle dispatching and routing.
- Integrating Operations Research algorithms into a decision-support framework in the web app of the company.
- Developing and integrating GIS-based tools (i.e., a local OSRM engine) needed for the optimization of the dispatching algorithm.
- Performing data analysis to evaluate algorithmic performance and identify systemic improvement opportunities.
- Bridging academic research with industrial application, ensuring scientific rigor while delivering practical solutions.

(remote) Duffel, Belgium

Oct 2023 – Oct 2025

Department of Engineering Management (ENM) - University of Antwerp*Postdoctoral Volunteer Researcher***Antwerp, Belgium***May 2023 – Oct 2025*

As a postdoctoral researcher, I continued to write and publish academic papers in the field of Operations Research. I also presented my research in international conferences. I remained affiliated to the university to pursue further collaborations and prepare grant proposals.

Department of Engineering Management (ENM) - University of Antwerp*Doctoral Researcher***Antwerp, Belgium***Jun 2019 – May 2023*

My PhD research focused on mathematical modelling and optimization of demand-responsive transportation systems.

Key achievements and responsibilities:

- Conducted independent research on novel semi-flexible public transport services.
- Developed mathematical models and algorithms for static and dynamic optimization of transportation systems.
- Published five papers in top-tier international journals.
- Presented research at nine international conferences and delivered invited seminars.
- Supervised Bachelor and Master students in practical projects and thesis work.
- Worked on collaborative research projects with academic and industry partners.

Atlas Copco*Improvement consultant***Wilrijk, Belgium***Sep 2018 – Apr 2019*

Project-based consulting work focused on optimizing packaging policies. My tasks included:

- Documented existing packaging policy for piping components.
- Proposed improvements using linear programming and metaheuristics.

Languages

English: Proficient**Spanish:** Native proficiency**Dutch:** Proficient**French:** Elementary**Computer skills**

Programming:

- *Proficient:* C++, Python, Java, R, MATLAB
- *Basic:* SQL, MongoCxx, Julia

Optimization Software:

- *Proficient:* CPLEX, Gurobi, Hexaly (exact and heuristic solvers)
- *Intermediate:* AMPL (modelling language)

Traffic & Simulation Software:

- *Elementary:* FlexSim (discrete-event simulation), VISSIM (microscopic traffic simulation), Maple

Development Tools:

- *Proficient:* L^AT_EX, Git/GitHub/Bitbucket (version control, CI/CD)
- *Intermediate:* Docker (containerized applications), Jira (project management)

Microsoft Office / Google Workspace: Excel / Sheets, PowerPoint / Slides, Word / Docs, Teams / Meet, Outlook / Gmail, Drive, Calendar (Proficient)

Accomplishments

Sint-Lievenscollege*Dr. Splichal Award***Antwerp, Belgium***2011*

Award for the best high-school thesis.

Sint-Lievenscollege*Zuster Roes Award***Antwerp, Belgium***2011*

Award for significant improvement in various aspects of high-school education.

University of Antwerp*Best Paper Award***Antwerp, Belgium***2020*

Finalist (2nd place) for the *Best Paper Award* in the Doctoral Day of the Faculty of Business and Applied Economics

EURO*ELAVIO scholarship***Monterrey, Mexico***2022*

Winner of the EURO scholarship for attending the ELAVIO summer school.

CORE UCLouvain*Invited Speaker***Louvain-la-Neuve, Belgium***2026*

I was invited to give a seminar on the topic of applied OR solutions at the CORE research center of UCLouvain.

Publications

A large neighborhood search algorithm to optimize a demand-responsive feeder service

Transportation Research Part C: Emerging Technologies, 127 (2021)

DOI: <https://doi.org/10.1016/j.trc.2021.103102>

A survey on demand-responsive public bus systems

Transportation Research Part C: Emerging Technologies, 137 (2022)

DOI: <https://doi.org/10.1016/j.trc.2022.103573>

A column generation algorithm for the demand-responsive feeder service

Networks, 80(3) (2022)

DOI: <https://doi.org/10.1002/net.22095>

The real-time dynamic online feeder service with a maximum headway at mandatory stops

Transportmetrica A: Transport Science, (2023)

DOI: <https://doi.org/10.1080/23249935.2023.2227738>

A demand-responsive feeder service with a maximum headway at mandatory stops

Networks, 83(1) (2023)

DOI: <https://doi.org/10.1002/net.22185>

Towards the Goldilocks Zone of demand-responsive bus services

4OR, 22, PhD Thesis Abstract (2024)

DOI: <https://doi.org/10.1007/s10288-023-00546-4>

Talks

ORBEL 34

34th Annual Conference of the Belgian Operations Research Society

A demand responsive feeder-system service with mandatory and clustered, optional bus stops

Lille, France

2020

ORBEL 35

Corona Sessions: Public Transportation

A demand-responsive feeder service with mandatory and optional bus stops

Virtual

2021

EURO 2021

31st European Conference on Operations Research

A large neighbourhood search algorithm to optimize a demand-responsive feeder service

Athens, Greece

2021

NORS 2021

The Norwegian Operations Research Society

A demand-responsive feeder service with mandatory stops and frequency constraints

Bergen, Norway

2021

ELAVIO 2022

Latin Ibero-American Summer School On Operations Research

A demand-responsive feeder service with a maximum headway at mandatory stops

Monterrey, Mexico

2022

MIC 2022

14th Metaheuristics International Conference

A demand-responsive feeder service with a maximum headway at mandatory stops

Ortigia-Syracusa, Italy

2022

ORBEL 36

36th Annual Conference of the Belgian Operations Research Society

Towards better service quality with the dynamic feeder service with a maximum headway at mandatory stops

Ghent, Belgium

2022

CLAIO 2022

XXI Latin Ibero-American Conference On Operations Research

Towards better service quality with the dynamic feeder service with a maximum headway at mandatory stops

Buenos Aires, Argentina

2022

IFORS 2023

The 23rd Conference of the International Federation of Operational Research Societies

The real-time dynamic online feeder service with a maximum headway at mandatory stops

Santiago, Chile

2023

Beta

Beta Symposium 2025

SMART-NEMT: Structured Models and Algorithms for Real-Time Non-Emergency Medical Transport.

Soesterberg, The Netherlands

2025

ORBEL 40

40th Annual Conference of the Belgian Operations Research Society

An application of advanced optimization methods in Non-Emergency Medical Transportation

Leuven, Belgium

2026