Bryan GALARZA

Antwerp – Belgium
bryangalarza1303@gmail.com • LinkedIn • 0000-0002-1827-5331
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 experience supervising students.

Core skills: Combinatorial Optimization | Transportation Modelling | Metaheuristics | Mathematical Programming | Algorithm Development | Coding
Nationality: Belgian citizen (EU)

Education

University of Antwerp, ANT/OR — **Antwerp, Belgium**
Doctor of Philosophy (Ph.D.) — *Jun 2019 – May 2023*
Operations Research
Supervisors: Kenneth Sörensen and Pieter Vansteenwegen
Thesis: Towards the Goldilocks Zone of demand-responsive transportation services

Ghent University, Industrial Systems Engineering — **Ghent, Belgium**
Master of Science in Engineering Sciences, Cum Laude — *Sep 2016 – Jul 2018*
Industrial Engineering and Operations Research (burgerlijk ingenieur)
Thesis: Multimodal coordination schemes for Intelligent Traffic Systems

Ghent University, Engineering and Architecture — **Ghent, Belgium**
Bachelor of Science in Engineering Sciences — *Sep 2012 – Jul 2016*
Chemical Engineering and Material Science (burgerlijk ingenieur)

Sint-Lievenscollege — **Antwerp, Belgium**
High-school, general secondary education (ASO) — *Sep 2005 – Jul 2011*
Science and Mathematics

Experience

Department of Engineering Management (ENM) - University of Antwerp — **Antwerp, Belgium**
Postdoctoral Researcher — *Oct 2025 – Present*
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.

VLAIO - Triptomatic — **(remote) Duffel, Belgium**
Lead Operations Research Expert — *Oct 2023 – Oct 2025*
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 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.

Department of Engineering Management (ENM) - University of Antwerp **Antwerp, Belgium**
Postdoctoral Volunteer Researcher *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 **Antwerp, Belgium**
Doctoral Researcher *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 **Wilrijk, Belgium**
Improvement consultant *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
Dutch: Proficient
Spanish: Native proficiency
French: Elementary

Computer skills

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

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

Traffic & Simulation Software:
- *Elementary:* FlexSim (discrete-event simulation), VISSIM (microscopic traffic simulation), Maple

Development Tools:
- *Proficient:* LaTeX, Git/GitHub/Bitbucket (version control, CI/CD)
- *Intermediary:* 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 **Antwerp, Belgium**
Dr. Splichal Award *2011*
Award for the best high-school thesis.

Sint-Lievenscollege **Antwerp, Belgium**
Zuster Roes Award *2011*
Award for significant improvement in various aspects of high-school education.

University of Antwerp **Antwerp, Belgium**
Best Paper Award *2020*
Finalist (2^{nd} place) for the *Best Paper Award* in the Doctoral Day of the Faculty of Business and Applied Economics

EURO **Monterrey, Mexico**
ELAVIO scholarship *2022*
Winner of the EURO scholarship for attending the ELAVIO summer school.

Publications (6)

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 (10)

ORBEL 34 — **Lille, France**
34th Annual Conference of the Belgian Operations Research Society — *2020*
A demand responsive feeder-system service with mandatory and clustered, optional bus stops

ORBEL 35 — **Virtual**
Corona Sessions: Public Transportation — *2021*
A demand-responsive feeder service with mandatory and optional bus stop

EURO 2021 — **Athens, Greece**
31st European Conference on Operations Research — *2021*
A large neighbourhood search algorithm to optimize a demand-responsive feeder service

NORS 2021 — **Bergen, Norway**
The Norwegian Operations Research Society — *2021*
A demand-responsive feeder service with mandatory stops and frequency constraints

ELAVIO 2022 — **Monterrey, Mexico**
Latin Ibero-American Summer School On Operations Research — *2022*
A demand-responsive feeder service with a maximum headway at mandatory stops

MIC 2022 — **Ortigia-Syracusa, Italy**
14th Metaheuristics International Conference — *2022*
A demand-responsive feeder service with a maximum headway at mandatory stops

ORBEL 36 — **Ghent, Belgium**
36th Annual Conference of the Belgian Operations Research Society — *2022*
Towards better service quality with the dynamic feeder service with a maximum headway at mandatory stops

CLAIO 2022 — **Buenos Aires, Argentina**
XXI Latin Ibero-American Conference On Operations Research — *2022*
Towards better service quality with the dynamic feeder service with a maximum headway at mandatory stops

IFORS 2023 — **Santiago, Chile**
The 23rd Conference of the International Federation of Operational Research Societies — *2023*
The real-time dynamic online feeder service with a maximum headway at mandatory stops

Beta — **Soesterberg, The Netherlands**
Beta Symposium 2025 — *2025*
SMART-NEMT: Structured Models and Algorithms for Real-Time Non-Emergency Medical Transport.