# Boris Detienne

boris.detienne@u-bordeaux.fr $\,\cdot\,$ math.u-bordeaux.fr/~bdetienn $\,\cdot\,$ (+33)<br/>6 63 74 52 24 Citizenship: French $\,\cdot\,$ Born June 30th, 1981

## **Research** interests

Integer programming, Robust optimization, Decomposition methods

### Education

- 2007 University of Technology of Compiègne Compiègne, France
  PhD in Information technology and Systems
  Title: *Planning and scheduling: decomposition and cut generation methods* Supervisor: Professor Eric Pinson.
- 2003 **Applied Mathematics Institute** Angers, France MSc in Applied mathematics and computer science.

# Positions

2013 -	Associate professor – University of Bordeaux, France
	Mathematics Institute of Bordeaux
	Inria team RealOpt.
2009 - 2013	Associate professor – University of Avignon, France
	Avignon laboratory of computer science
2008 - 2009	Postdoctoral researcher - Center for microelectronics in Provence, Gardanne,
	France
2007 - 2008	Research engineer – Rhapso-Graphisoft (Palaiseau, France) and Applied Mathemat-
	ics Institute, (Angers, France)
2003 - 2007	Teaching assistant – Applied Mathematics Institute, Angers, France

# Teaching and service

#### Service

- 2020 **Responsible, master program** in operations research and decision science, University of Bordeaux
- 2014 2020 **Internship coordinator**, master program in operations research and decision science, University of Bordeaux
- 2010 2013 **Project coordinator**, master program in computer science, University of Avignon

### Teaching

2013 - Associate professor, University of Bordeaux, France
 Around 200 teaching hours per year, undergraduate and master degrees
 Instructor for the following master courses: Optimization under uncertainty (6 ECTS, 2014–), Continuous optimization (3 ECTS, 2015–), Production planning and scheduling (6 ECTS, 2013), Network flows and routing (6 ECTS, 2019–), Operations research (3 ECTS, 2018)
 Teaching assistant for various courses in mathematical optimization and computer

Teaching assistant for various courses in mathematical optimization and computer science.

2009 – 2013 Associate professor, University of Avignon, France Around 200 teaching hours per year, undergraduate and master degrees Instructor for the following master courses: Optimization (6 ECTS, 2009–2013), Supply chain management (3 ECTS, 2012), Cryptography (3 ECTS, 2010–2013), Advanced algorithmics (2009–2013) Instructor for the following undergraduate courses: Operations research (3 ECTS, 2009–2013), Algorithmics and optimization (3 ECTS, 2009), Linear programming (3 ECTS, 2009–2012) Teaching assistant for various courses in computer science.

2003 – 2007 **Teaching assistant**, Applied Mathematics Institute, Angers, France Around 100 teaching hours per year, for various undergraduate courses in applied mathematics and computer science.

# Supervision

### Ph.D. theses supervised

2021 -	New models and solution approaches to humanitarian logistics problems Mickaël Gaury, co-advised (50%) with Gautier Stauffer
2017 - 2021	Aggregation and disaggregation of mixed integer linear programs Gaël Guillot, co-advised (50%) with François Clautiaux
2016 - 2019	Rolling stock optimization (with SNCF) Mohamed Benkirane, co-advised (50%) with François Clautiaux
2015 – 2018	Robust scheduling of nuclear plant outages (with EDF) Rodolphe Griset, co-advised (50%) with François Vanderbeck

### Collaboration with postdoctoral researchers

2019	Aurélien Froger
	Dynamic aggregation techniques for formulations mixing integer linear program-
	ming and dynamic programming

2018 Ayşe Nur Arslan Robust integer programs

### 2016 – 2017 Halil Şen

Acceleration of decomposition methods for stochastic problems

### Master theses

I supervised 10 master internships.

- 2019 Henri Lefebvre (University of Technology of Compiègne) received the best master thesis award by ROADEF, the French OR society, for his work with me about decomposition approaches for robust scheduling with integer recourse
- 2016 Gaël Guillot (University of Bordeaux) was finalist for the best master thesis award by ROADEF for his work with me about aggregation and disaggregation techniques for the temporal knapsack problem.

# Grants and industrial collaborations

- 2020 Thales avionics. Co-responsible. Multi-core scheduling. Funding of one master internship.
- 2019 EDF (French producer of electricity). Large scale energy management problem with uncertainty. Responsible. 30k€.

- 2019 RTE (French electricity distributor). Improving Benders decomposition, application to network design. Co-responsible with François Clautiaux. Funding of a research engineer position for 6 months.
- 2016 2019 SNCF (French railway company). Rolling stock optimization. Co-responsible with François Clautiaux. Funding of one Ph.D. thesis.
- 2013–2018 EDF. Maintenance planning at power plants. Member of the project.
- 2015– 2017 Ertus (consulting company). Planning of phytosanitary treatments. Member of the project.
  - 2008 ST Microelectronics. Scheduling and Advanced process control. Postdoctoral researcher.
  - 2007 Rhapso-Graphisoft. Design and implementation of planning and scheduling engines for cardboard industry (two of them were deployed and running). Research engineer.

# Community involvement

#### Member of Ph.D. dissertation committees

Boukhalfa Zahout, Université de Tours, 2021

Ikram Bourras, Université de Montpellier, 2019 Imen Ben Mohamed, Université de Bordeaux/Kedge Business School, 2019

Xavier Libeaut, Applied mathematics institute, Angers, 2013

Xavier Elbeaut, Applied matternatics institute, Angers,

Carlos Montoya, Ecole des mines de Nantes, 2012

Ali Obeid, Center for microelectronics in Provence, Gardanne, 2012

### • Organizing committees

ISMP 2018 (1900 attendees, https://ismp2018.sciencesconf.org): local committee, co-responsible for stream *Stochastic optimization* 

ROADEF2014 (430 attendees, https://roadef2014.sciencesconf.org): responsible for the submission and review website, coordination of the review process, edition and modifications of the schedule, edition of the proceedings, co-responsible for the stream and scheduling

### • Scientific expert

European Science Foundation (2020 – ) Conseil supérieur de la formation et de la recherche stratégique (2012)

### Hiring committees

Associate professor, Université de Tours, 2020 Temporary assistant professor, Université d'Avignon (2010 – 2013)

- Member of the scientific committee, Avignon laboratory of computer science (2010 2013)
- **Referee** for European Journal of Operational Research, Discrete Applied Mathematics, Journal of Scheduling, Computers and Operations Research, Information systems and Operational Research, Annals of Operations Research and 40R, and for conferences ROADEF, MOSIM, INOC

# Publications

### **Published** papers

- A Arslan, B Detienne, Decomposition-based approaches for a class of two-stage robust binary optimization problems
  Accepted for publication in *INFORMS Journal on Computing*
- F Clautiaux, B Detienne, G Guillot, An iterative dynamic programming approach for the temporal knapsack problem
   *European Journal of Operational research* 293 (2), 442-456, 2021
- W van Ackooij, J De Boeck, B Detienne, S Pan, M Poss, Optimizing power generation in the presence of micro-grids
   *European journal of operational research* 271 (2), 450-461, 2018
- B Detienne, R Sadykov, S Tanaka, The two-machine flowshop total completion time problem: branch-and-bound algorithms based on network-flow formulation, *European Journal of Operational Research* 252 (3), 750-760, 2016
- B. Detienne, Mixed Integer Linear Programming approach for minimizing the number of late jobs with and without machine availability constraints
  *European Journal of Operational Research*, 235(3), p. 540-552, 2014
- B. Detienne, D. Quadri, C.D. Rodrigues, Two phase solution for the general moving target search problem based on a 0-1 linear model
   *International Journal of Production Research* 52(4), p. 7177-7192, 2014
- N. Absi, B. Detienne, S. Dauzère-Pérès, Heuristics for multi-item capacitated lot-sizing with lost sales
   *Computers and Operations Research* 40(1), p. 264-272, 2013
- N. Camelin, B. Detienne, S. Huet, D. Quadri, F. Lefèvre, Concept discovery and automatic semantic annotation for language understanding in an information-query dialogue system using Latent Dirichlet Allocation and segmental methods
   *in Knowledge Discovery, Knowledge Engineering and Knowledge Management IC3K 2011*, Communications in Computer and Information Science Series, Volume 348, pp 45-59, Springer, 2013
- B. Detienne, S. Dauzère-Pérès, C. Yugma, An exact approach for scheduling jobs with regular step cost functions on a single machine
  *Computers and Operations Research* 39(5), p. 1033-1043, 2012

- B. Detienne, S. Dauzère-Pérès, C. Yugma, Scheduling jobs on parallel machines to minimize a regular step total cost function
  *Journal of scheduling* 14(6), p. 523-538, 2011
- B. Detienne, E. Pinson, D. Rivreau, Lagrangian Domain Reductions for the Single Machine Earliness-Tardiness Problem with Release Dates *European Journal of Operational Research*, 201(1), p.45-54, 2010
- B. Detienne, L. Péridy, E. Pinson, D. Rivreau, Cut Generation for an Employee Timetabling Problem,
  *European Journal of Operational Research*, 197(3), p. 1178-1184, 2009

### Submitted papers

- R Griset, B Bendotti, B Detienne, M Porcheron, H Şen, F Vanderbeck, Combining Dantzig-Wolfe and Benders decompositions to solve a large-scale Nuclear Outage Planning Problem Under review at *European Journal of Operational Research*
- F Clautiaux, B Detienne, H Lefevbre, A two-stage robust approach for minimizing the weighted number of tardy jobs with objective uncertainty Under review at *Journal of scheduling*
- M Benkirane, F Clautiaux, B Detienne, A Hypergraph Model for the Rolling Stock Rotation Planning and Train Selection
   Under review at *Transportation science*
- A Arslan, B Detienne, Robust Strategic Planning of Phytosanitary Treatments in Agriculture Submitted to *European Journal of Operational Research*

### Papers in preparation

- H Lefebvre, B Detienne, E Malaguti, M Monaci, Solving adjustable robust convex optimization problems under objective uncertainty In preparation.
- X Blanchot, F Clautiaux, B Detienne, A Froger, M Ruiz, The Benders by batch algorithm: design and stabilization of an enhanced algorithm to solve multicut Benders reformulation of two-stage stochastic programs In preparation.

### Selected presentation in conferences

• **Semi-plenary tutorial talk** at ROADEF 2020 (Annual conference of the French OR society, about 400 participants)

Introduction à l'optimisation robuste et applications en planification (*Introduction to robust optimization and applications in planing*)

### Awards and recognition

- Best paper award, track "New developments in scheduling and manufacturing" of 14th IFAC Symposium on Information Control Problems in Manufacturing INCOM 2012, Bucharest, Romania, 2012
  B. Detienne, Minimizing the weighted number of late semi-resumable jobs with deterministic machine availability constraints (with proceedings)
- Best student paper award at 6ème Conférence Francophone de MOdélisation et SIMulation MOSIM'06, Rabat, Maroc, 2006
  Génération de coupes pour la planification d'agents (with proceedings)