



Best AIROYoung Dissertation 2022

The AIROYoung Board

Centro Didattico Morgagni – Florence, September 02, 2022

International Conference on Optimization and Decision Science 2022

What it is

A **PhD thesis award** organized by AIROYoung
to select the best doctoral thesis in operations research,
discussed at any Italian university
between July 1, 2021 and June 30, 2022

Main topics

- Combinatorial optimization
- Energy efficiency
- Global optimization
- Machine learning
- Nonlinear optimization
- Optimization under uncertainty
- Railway transportation
- Scheduling

A few numbers

- **8 applications**
- **15 referees** (external to previous/current AIROYoung boards)
- **4 finalists**
- **1 winner**, to be announced at the end of this session
- **Prize: 250 €**

Evaluation and results

- For each thesis, 2 referees
- Criteria and average high-quality results

Significance (max 15)	14.19
Scientific contribution (max 35)	32.18
Impact on related fields (max 25)	21.56
Quality of publications (max 15)	12.38
Writing quality (max 10)	9.47
Average score (max 100)	89.78



- **Anna Livia Croella**, *Real-time Train Scheduling: Reactive and Proactive Algorithms for Safe and Reliable Railway Networks*
- **Daniel Faccini**, *Models and Approximations for Optimization Problems under Uncertainty with Applications to Support Vector Machine and Revenue Management*
- **Serena Fugaro**, *Optimizing and Reoptimizing: Tackling Static and Dynamic Combinatorial Problems*
- **Matteo Lapucci**, *Theory and Algorithms for Sparsity Constrained Optimization Problems*

Presentations

And the winner is...

Serena Fugaro, "Optimizing and Reoptimizing: Tackling Static and Dynamic Combinatorial Problems"

Significance (max 15)	15	15	Average score = 96.5
Scientific contribution (max 35)	35	35	
Impact on related fields (max 25)	24	25	
Quality of publications (max 15)	15	10	
Writing quality (max 10)	9	10	
Total score (max 100)	98	95	

Referee #1: *"The proposed Combinatorial Optimization problems are of great interest in application contexts. The results obtained have highlighted that the proposed methods improve the performance of the state-of-the-art solution approaches, and a detailed analysis of the results is also provided for each problem to detect its limits."*

Referee #2: *"The problems addressed have a strong theoretical and practical impact. The choice of the methodologies used is important. The researcher demonstrates full competence in handling different and varied methodologies to address the resolution of the problems considered. The theoretical results obtained are very good, supported by a detailed and in-depth experimental phase. The computational results confirm the goodness of the choice of the methodologies used and the correct definition of the related resolution approaches. The problems faced and the relative theoretical and experimental results have a high applicative potential both in the OR/MS sector and in other application fields, e.g., telecommunications and transport area. The results obtained from the research activities and presented in the doctoral thesis have been adequately publicized and have found space in the reference scientific community through good publications in medium-high quality journals. Furthermore, the research activities are excellently presented in the doctoral thesis through a structured, coherent and organic organization of the contents."*