

# UMBERTO JUNIOR MELE

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## BIO

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With a strong background in Computer Science, Mathematics, and Statistics, I am specialized in combinatorial optimization, specifically I studied meta-heuristics used to solve problems related to vehicular routing and task scheduling. My interests lie also in understanding and utilizing large language models to increase automation for optimization processes. I am devoted to conducting research and finding practical applications for artificial intelligence, while fostering a culture of continuous learning within the domain.

## EDUCATION

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| <b>PhD in Artificial Intelligence</b> , Università della Svizzera Italiana | Expected 2023 |
| <b>Master in Data Science</b> , La Sapienza University of Rome             | 2019          |
| <b>Bachelor in Management Engineering</b> , La Sapienza University of Rome | 2016          |

## EXPERIENCE

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| <b>Researcher</b>   | 2019 - 2023                |
| Dalle Molle Institute for Artificial Intelligence (IDSIA SUPSI-USI) | <i>Lugano, Switzerland</i> |

- Two journal papers were successfully published, accompanied by six conference proceedings.
- Participated in six conferences, showcasing Machine Learning's application in Combinatorial Optimization.
- Achieved a notable third position in an international competition centered around reinforcement learning techniques for solving vehicle routing problems.

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|------------------------------------|----------------------------|
| <b>Teaching Assistant</b>          | 2019 - 2023                |
| Università della Svizzera Italiana | <i>Lugano, Switzerland</i> |

- Teaching, grading, and creating exercises for both the Bachelor's and Master's AI courses.
- Seven Master's students were supervised on their thesis projects.

## NOTABLE PUBLICATIONS

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**A new constructive heuristic driven by machine learning for the traveling salesman problem.**

Umberto Junior Mele, Luca Maria Gambardella, Roberto Montemanni, *Algorithms*, 2021, [doi:10.3390/a14090267](https://doi.org/10.3390/a14090267)

**Machine learning approaches for the traveling salesman problem: A survey.**

Umberto Junior Mele, Luca Maria Gambardella, Roberto Montemanni, *Proceedings of the 8th International Conference on Industrial Engineering and Applications (Europe)*, 2021, [doi:10.1145/3463858.3463869](https://doi.org/10.1145/3463858.3463869)

**Reinforcement learning and additional rewards for the traveling salesman problem**

Umberto Junior Mele, Luca Maria Gambardella, Roberto Montemanni, *Proceedings of the 8th International Conference on Industrial Engineering and Applications (Europe)*, 2021, [doi:10.1145/3463858.3463885](https://doi.org/10.1145/3463858.3463885)

## SKILLS

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| <b>Technical Skills</b> | Reinforcement Learning, Machine Learning, Combinatorial Optimization, Statistics |
| <b>Soft Skills</b>      | Creativity, Motivation, Resilience, Positivity                                   |
| <b>Languages</b>        | Italian, English, Portuguese   |

## EXTRA-CURRICULAR ACTIVITIES

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- Since the age of six, my piano skills have been perfected, fueled by a profound love for classical music.
- Salsa and bachata hold a special place in my heart, as they embody my passion for dance and self-expression.