ALICE CALAMITA

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🏢 Dipartimento di Ingegneria Informatica Automatica e Gestionale "Antonio Ruberti", A114

EDUCATION

Sapienza University of Rome **Rome, Italy**
PhD Program in Automatic Control, Bioengineering and Operations Research *November 2020 - Present*
Curriculum: Operations Research

Sapienza University of Rome **Rome, Italy**
Master's Degree in Management Engineering *October 2018 - October 2020*
Grade: 110/110 cum laude
Curriculum: Optimization models and algorithms to support strategic and operational decision making.

Thesis: "Neural network as surrogate model for the optimization of membrane gas separation processes"
A machine learning and optimization approach to improve performance in the design of multi-membranes systems in gas separation processes. Mapped the chemical process through the training of Feed Forward Neural Networks with simulation data. Implemented the optimization model in Pyomo. Applied Multistart Method for global optimization of the multi-membranes system.
Thesis Supervisors: Laura Palagi; Bernardetta Addis, Veronica Piccialli.

Sapienza University of Rome **Rome, Italy**
Bachelor's Degree in Management Engineering *October 2015 - July 2018*
Grade: 110/110 cum laude

RESEARCH EXPERIENCE

Université de Lorraine **Nancy, France - Rome, Italy**
International Research Activity *March 2020 - Present*
Research activity carried out with LORIA and LRGP research centers on the thesis topics. Collaborated with optimization, machine learning and chemical engineering experts. Developed methodological skills and adaptability to a multicultural environment. Gained significant experience in working and dealing with people coming from different education.

IMPLEMENTATION PROJECTS

- *Machine Learning field*: Multilayer Perceptron and Radial Basis Function Neural Networks for a regression problem (Python). Support Vector Machine-based algorithm for an image classification problem (Python)
- *Continuous Optimization field*: Newton's Method for local optimization (Python). Filled Function Method for global optimization (Python)
- *Financial field*: Logistic Model for credit scoring (R). Cox-Ross-Rubinstein model for option pricing (R)

OTHER EXPERIENCE

- *Library Assistant*, Biblioteca G. Boaga, Sapienza University of Rome, Rome, Italy   January 2019 - November 2019
  Customer and main services support. Developed excellent communication skills by interacting with people from all backgrounds.
- *Private maths tutor for high school and university students*   2016 - Present
  Acquired verbal communication and motivation skills.
- *Participation in the Business Game UMC2*   March 2018 - May 2018
  Competition between teams running a firm in a virtual market. Assessed how logistic or production choices impacted the company's return and performance and developed significant problem-solving skills.
- *Participation in the Local Round of B.E.S.T. Engineering Competition*   March 2018
  Creative and challenging problem-solving and team-work competition. Developed skills of leadership, team motivation, public speaking and time-management.
- *Volunteer at soup kitchen*, Mensa Caritas "Don Luigi Di Liegro", Rome, Italy   September 2014 - June 2015
  Improved ability to communicate with people from social distress situations. Gained great empathy, open-mindedness, adaptability and collaboration skills.

ACADEMIC AWARDS

- B. Addis, A. Calamita, C. Castel, F. Di Luzio, E. Favre, A. Macali, V. Piccialli, "Membrane Separation Processes Using Machine Learning Based Mathematical Programming Models", presented at INFORMS Virtual Annual Meeting 2020 conference
- Winner of all available scholarships for thesis abroad of Fondazione Sapienza of the 2019-2020 academic year
- 1st place in the ranking of the Sapienza highest achieving students of Management Engineering of the 2018-2019 academic year

SKILLS

Core Competencies Operations Research, Data Analytics, Machine Learning
Computer skills Python, R, MATLAB, AMPL, SQL, Microsoft Office
Languages English: advanced level, both written and spoken. Italian: mother tongue

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