Danny D'Agostino

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Experience

Duke-NUS Medical School **Singapore, SG**
Research Fellow in Artificial Intelligence for Healthcare *July 2023–Now*
Research topics:
- Explainable AI

Advisor: Prof. Nan Liu

National University of Singapore **Singapore, SG**
Research Fellow in Machine Learning and Optimization *Mar 2022–Jun 2023*
Research topics:
- Explainable AI
- Supervised Dimensionality Reduction
- Optimization for Machine Learning

Advisor: Prof. Christine Annette Shoemaker

Italian National Research Council **Rome, IT**
Research Fellow in Deep Learning *Nov 2021–Mar 2022*
Research topic:
- Bayesian Recurrent-type Deep Neural Networks for Multivariate Time Series Data

Huawei Technologies **Dublin, IE**
Research Intern in Machine Learning *Sep 2020–Mar 2021*
Research topics:
- Causal Inference and Causal Discovery for Anomaly Detection
- Time Series Clustering for Networks Data

Advisor: Dr. Alexandros Agapitos

Pi School **Rome, IT**
Data Science and AI Consultant *Sep 2019–Dec 2019*
Worked on a project presented by a real client (OCTO telematics), developing AI-based solutions.
Advisor: Dr. Sébastien Bratières

Sapienza University of Rome **Rome, IT**
Ph.D. Researcher in Optimization and Applied Machine Learning *Oct 2017–May 2021*
Research topics:
- Applied Machine Learning and Deep Learning for Fluid Dynamics
- Deterministic and Bayesian Global Optimization

Italian National Research Council **Rome, IT**
Research Intern in Machine Learning *Sep 2016–Mar 2017*
Research topic:
- Nonlinear Dimensionality Reduction Models for Simulation-based Design Optimization

Education

Sapienza University of Rome **Rome, IT**
Doctor of Philosophy in Operations Research *Oct 2017–May 2021*

Thesis: A Lipschitzian Global Optimization Algorithm and Machine Learning for Fluid Dynamics
Advisor: Prof. Stefano Lucidi and Dr. Matteo Diez

Sapienza University of Rome **Rome, IT**
Master's Degree in Management Engineering *Oct 2014–Mar 2017*
Curriculum: Operations Research and Data Science
Thesis: Non-Linear Dimensionality Reduction Models for Simulation-based Design Optimization

Sapienza University of Rome **Rome, IT**
Bachelor's Degree in Management Engineering *Oct 2010–Jun 2014*
Thesis: A Combinatorial Optimization Model for the Hub Location Problem

Languages

Italian: Mothertongue

English: Advanced C1

Computer skills

Programming Languages: Python, R, Java

Mathematical Programming: AMPL, Pyomo

Data Science: Scikit-learn, statsmodels, pandas

Deep Learning: PyTorch, Keras

Big Data: Spark, Hadoop

Databases: SQL

Certifications

- 1st Summer School on Machine Learning and Big Data with Quantum Computing (2020, Lisbon, PT).
- 3rd International Summer School in Deep Learning (2019, Warsaw, PL).
- Summer School on Optimization, Big Data and Applications (2019, Veroli, IT).
- Summer School on Advances in Mathematical Optimization (2018, Heidelberg, DE).
- "Data Science and Engineering with Apache Spark": certification released by the University of California 'Berkeley' through the online platform edX.

Service

Reviewer for the following journals:
- Mathematical Programming Computation, Springer.
- IEEE Journal of Biomedical and Health Informatics.

Additional Information

Gender: Male

Nationality: Italian

Publications

[1] Danny D'Agostino, Ilija Ilievski, and Christine Annette Shoemaker. Learning active subspaces and discovering important features with gaussian radial basis functions neural networks. *arXiv preprint arXiv:2307.05639*, 2023.

[2] Danny D'Agostino. Generative models for anomaly detection and design-space dimensionality reduction in shape optimization. *arXiv preprint arXiv:2308.04051*, 2023.

[3] Danny D'Agostino. An efficient global optimization algorithm with adaptive estimates of the local lipschitz constants. *arXiv preprint arXiv:2211.04129*, 2022.

[4] Danny D'Agostino, Andrea Serani, Emilio F Campana, and Matteo Diez. Nonlinear methods for design-space dimensionality reduction in shape optimization. In *International Workshop on Machine Learning, Optimization, and Big Data*, pages 121–132. Springer, 2017.

[5] Danny D'Agostino, Andrea Serani, Frederick Stern, and Matteo Diez. Time-series forecasting for ships maneuvering in waves via recurrent-type neural networks. *Journal of Ocean Engineering and Marine Energy*, pages 1–9, 2022.

[6] Danny D'Agostino, Matteo Diez, Mario Felli, and Andrea Serani. Piv snapshot clustering reveals the dual deterministic and chaotic nature of propeller wakes at macro- and micro-scales. *Journal of Marine Science and Engineering*, 11(6), 2023.

[7] Danny D'Agostino, Andrea Serani, Emilio F Campana, and Matteo Diez. Deep autoencoder for off-line design-space dimensionality reduction in shape optimization. In *2018 AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, page 1648, 2018.

[8] Danny D'Agostino, Andrea Serani, and Matteo Diez. Design-space assessment and dimensionality reduction: An off-line method for shape reparameterization in simulation-based optimization. *Ocean Engineering*, 197:106852, 2020.

[9] Danny D'Agostino, Andrea Serani, Frederick Stern, and Matteo Diez. Recurrent-type neural networks for real-time short-term prediction of ship motions in high sea state. *arXiv preprint arXiv:2105.13102*, 2021.

[10] Danny D'Agostino, Andrea Serani, and Matteo Diez. On the combined effect of design-space dimensionality reduction and optimization methods on shape optimization efficiency. In *2018 Multidisciplinary Analysis and Optimization Conference*, page 4058, 2018.

[11] Danny D'Agostino, Andrea Serani, Emilio Fortunato Campana, and Matteo Diez. Augmented design-space exploration by nonlinear dimensionality reduction methods. In *International Conference on Machine Learning, Optimization, and Data Science*, pages 154–165. Springer, 2018.

[12] Andrea Serani, Danilo Durante, Matteo Diez, Danny D'Agostino, Simon Clement, Joseph Badra, Matthieu Andre, Masayuki Habukawa, and Philippe Bardet. Piv data clustering of a buoyant jet in a stratified environment. In *AIAA Scitech 2019 Forum*, page 1830, 2019.