Andrew David WERNER ROSEMBERG

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EDUCATION

2023–Present **PhD, Machine Learning and Optimization (GPA 4.0) - AI4OPT Fellowship**
ISyE - Georgia Institute of Technology, Georgia, United States
Advisor: Pascal Van Hentenryck
Focus: Modeling and solution approaches for Decision-Making under Uncertainty (Constrained RL, Robust and Stochastic Programming) and Bilevel Optimization, combining Machine Learning and Optimization.
Electives: Convex Optimization for Statistical Inference (Arkadi Nemirovski); Large Language Models; Deep Learning and Deep Reinforcement Learning.
Teaching: Special Topics on Optimal Control and Learning — Fall 2025 (ISYE 8803 VAN) - Newsletter.

2018 – 2019 **Master's degree in Operations Research**
Electrical Engineering Department, Pontifical Catholic University of Rio de Janeiro, PUC-Rio, Brazil
Advisor: Alexandre Street **| Committee:** Andy Philpott, Arild Helseth, Davi Valladão, and Bruno Fanzeres.
Focus: Optimization and Decision-Making under Uncertainty approaches for quantitative finance; portfolio optimization; dynamic allocation of resources; asset and liability management; and energy systems.
Electives: Convex and Integer programming, decision under uncertainty (covering Online Learning, Robust, and Stochastic Optimization), and Probability Theory (covering high-dimensional statistics, structured and score-driven models for forecasting, and measure theory).
Thesis: A Framework for Assessing the Impacts of Network Formulations in the Operation of Hydrothermal Power Systems (https://doi.org/10.17771/PUCRio.acad.51577)

2014–2017 **Double Degree, General Engineering, BRAFITEC Merit Scholarship.**
École Centrale de Marseille, France
Minor Degree: Computer Science and Information Systems.
Electives: Artificial Intelligence (supervised and unsupervised learning for regression and classification), Information Theory, Optimal Control, and Continuous Analysis.

2012–2017 **Mechatronics and Control Engineering**
Pontifícia Universidade Católica do Rio de Janeiro, PUC-Rio, Brazil
Electives: Linear Programming, Functional and Object-oriented programming, Data Structures, and Mathematical Programming in Capital markets.

PUBLICATIONS

Nov 6, 2026 **Sobolev Training of End-to-End Optimization Proxies.** NeurIPS 2026 - Main Conference.

Sep 01, 2025 **Strategic Bidding in Energy Markets with Gradient-Based Iterative Methods.**
Sustainable Energy, Grids and Networks, 2025 - https://doi.org/10.1016/j.segan.2025.101878. IREP 2025

Mar 22, 2025 **Differentiable Optimization for Deep Learning-Enhanced DC Approximation of AC Optimal Power Flow.** arXiv:2504.01970. Presented at NeurIPS 2025 ML×OR Workshop.

May 22, 2024 **Efficiently Training Deep-Learning Parametric Policies using Lagrangian Duality**
arxiv:2405.14973. Presented at NeurIPS 2025 ML×OR Workshop.

Oct 10, 2023 **Learning Optimal Power Flow Value Functions with Input-Convex Neural Networks**
EPSR - Power Systems Computation Conference, 2024. DOI: 10.1016/j.epsr.2024.110643. Presented at PSCC.

Jan 02, 2022 **Assessing the Cost of Network Simplifications in Long-Term Hydrothermal Dispatch Planning Models**
IEEE Transactions on Sustainable Energy, 2022 - DOI: 10.1109/TSTE.2021.3106810. Presented at INFORMS|GM.

Aug 09, 2018 **Futures Contracts Portfolio Selection via Robust Data-Driven Optimization**
50th Brazilian Operational Research Symposium - SBPO proceedings, 2018. Conference Paper.

Invited Talks

2022 ICCOPT - Methods for Ambiguity Set Estimation in Distributionally Robust Optimization.

2021 EURO2021 - Assessing the choice of ambiguity set for distributionally robust portfolio selection in electricity spot markets (co-author and session chair).

RESEARCH EXPERIENCES

2026-2026 (6 months) **Graduate Visiting Researcher, Robot Learning Lab, UC Berkeley**
Working with Pieter Abbeel on learning-based humanoid locomotion and dexterous manipulation.

2024-Present **Graduate Researcher at Los Alamos National Laboratory, Los Alamos, US**
Research in Differentiable Optimization and Model-Based Reinforcement Learning for Control Problems in Energy and Robotics.

2023–Present **Graduate Researcher at AI4OPT, Atlanta, US**
Foundational Research in automated decision-making methods under uncertainty, combining Machine Learning, Optimization and Hardware Acceleration. Focus on training and integration of fast optimization surrogates with feasibility guarantees to complex time-sensitive control problems.

2020-2023 (3 years) **Researcher at Invenia Labs, Cambridge, UK**
Strategic algorithmic operation in energy markets to support the renewable energy transition.
- Led projects on the implementation of stochastic, robust, and distributionally robust optimization approaches to tackle uncertainty in daily bidding operations, coupling Machine Learning techniques to estimate uncertainty and appropriate optimization methods to find robust decisions.
- Contributed to the construction of a detailed market simulator for counterfactual analysis.

Led work on decomposition techniques for large-scale Integer and continuous optimization problems, proposed methods for estimation of unknown parameters of the grid through Inverse Optimization and other heuristics, and led the data analysis of simulation results accuracy.
- Exploration of exact and surrogate approaches to bi-level optimization (for hyperparameter optimization and strategic bidding). Including integration of Automatic Differentiation and Automatic Dualization of optimization problems to help implement explored approaches.

Experience in MISO, PJM, ERCOT, CAISO, SPP, ISO-NE, and NYISO.

2017-2019 (2.5 years) **Research Staff Member at LAMPS PUC-Rio, Rio de Janeiro, Brazil**
Research and development of mathematical programming solutions to find power systems transmission usage optimal contracting strategies for one of Brazil's biggest electricity services companies (Energisa Group).
Development of flexible software for Hydrothermal Multistage Economic dispatch in a consulting project for FGV Energia to help assess network and installed capacity changes. (HydroPowerModels Project).

2017 (6 months) **Intern at Bank BBM, BoCom, Rio de Janeiro, Brazil**
Trade note receivable fraud risk assessment while in the Data Science team.
Macroeconomic indicators analysis while in the Economic Research team.

2016-2017 (6 months) **Research Intern at Air Liquide Medical Systems, Air Liquide Group, Paris, France**
Modeling of the company's first integrated breathing-support machine simulator to help researchers test new designs and access solutions. Focus on both CPAP and BiPAP breathing programs for the Vendome home ventilator.

2015 (5 weeks) **Intern at Northumberland Tyne and Wear NHS Foundation Trust, Newcastle, UK**
Creation of a digital consumables database for stock control and protocols for logging supply usage.

PROJECTS

2023-Present **LearningToOptimize -** LearningToOptimize.jl
An open-source organization focused on learning fast policies for complex decision problems.

2018-Present **HydroPowerModels -** HydroPowerModels.jl
An open-source tool for Multistage Hydrothermal Power System Planning using Stochastic Programming (SDDP). DOI: 10.21105/jcon.00035. Presented at JuliaCon.

2015-2016 (6 months) **GSM Sector ("Groupe Signaux Multidimensionnels") of the Fresnel Institute**
Development of classification methods on MATLAB to classify patients suffering from seizures of epilepsy by their EEG signal.

2014 (10 months) **Mechatronics Laboratory of PUC-RIO and Aeromodelling Group (AeroDesign AERO-RIO)**
Virtual modeling of aircraft parts on SolidWorks; building physical models; studying and programming microcontrollers.

LANGUAGES

English Full Professional Proficiency.
French Full Professional Proficiency /Level C1 (common European framework of reference for languages) (DALF C1)
Portuguese Native/Mother language
German Level B1 (Common European Framework of Reference for languages) (DSD I)
Programming Julia, Python, C, C++, C#, Java, and SQL.