Achraf Bouhmady

Curriculum Vitae

Postdoctoral Researcher
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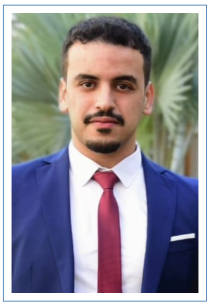

Education

2021–2026 **Ph.D. in Applied Mathematics**, *Mohammed V University*, Rabat, Morocco.
Thesis: *Optimal Control and Data-Driven Frameworks for Dynamic Decision Systems.* Research focus on resource allocation and dynamic intervention strategies, with applications to epidemic control.
Advisors: Prof. Nadia Raissi and Prof. Mustapha Serhani.

2018–2020 **Master – Analysis and Applications, Option: Mathematical Modeling**, *Mohammed V University*, Rabat, Morocco.
Thesis: *Optimal Pricing Strategies via Control Theory.*

2014–2018 **Bachelor – Mathematical Sciences and Applications**, *Ibn Tofail University*, Morocco.
Major project: *Foundations of Lebesgue Spaces*.

Publications

Journal Articles

2026 **Achraf Bouhmady and Othman Cherkaoui Dekkaki**, Hamilton–Jacobi Reachability for Viability Analysis of Constrained Waste-to-Energy Systems under Adversarial Uncertainty, **European Journal of Control**. DOI: https://doi.org/10.1016/j.ejcon.2026.101501.

2025 **Achraf Bouhmady, Mustapha Serhani, and Nadia Raïssi**, Dynamic decision modelling for viable short and long term production policies: an HJB approach, **Optimization,** Taylor & Francis. DOI: 10.1080/02331934.2025.2606328.

2025 **Achraf Bouhmady, Mustapha Serhani, and Nadia Raïssi**, Optimal Strategies for a Controlled SIR Model with Dynamic Reproduction Number and Economic Feedback, **Boletim da Sociedade Paranaense de Matemática**. DOI: https://doi.org/10.5269/bspm.79640.

2025 **Achraf Bouhmady, Hamza Kadiri, Khalid Belkhoutout, and Nadia Raïssi**, Dynamic Portfolio Optimization in Morocco's Stock Market through Machine-Learning Selection and Complex Mean-Variance Allocation, Statistics, **Optimization and Information Computing**. DOI: https://doi.org/10.19139/soic-2310-5070-2529.

2025 **Othman Cherkaoui Dekkaki, Achraf Bouhmady, and Ibtissam Benamara**, Multi-objective Optimal Control of a Bioenergy–Soil System under Fertility Constraints, **Nonlinear Science**. DOI: https://doi.org/10.1016/j.nls.2025.100072.

Proceedings Papers/ Chapters book

2025 **Hamza Kadiri, Achraf Bouhmady, and Khalid Belkhoutout**, Predicting Artificial Intelligence Techniques in Financial Trading: A Systematic Literature Review, **Lecture Notes in Networks and Systems, Springer**. DOI: https://doi.org/10.1007/978-3-032-14430-0_24.

Research Experience

Africa Business School, Mohammed VI Polytechnic University (UM6P), Morocco

March, 2026 – present — ***Postdoctoral Researcher***.
Conducting research in optimal control, data-driven decision systems, and predictive maintenance analytics. Applying control theory and machine learning to sustainable industrial systems.

National Institute of Applied Sciences (INSA) of Rouen Normandy, France

June, 2024 – January, 2025 — ***Visiting Researcher***.
Conducted research on numerical methods for nonlinear Hamilton–Jacobi–Bellman (HJB) equations. Developed viscosity-based numerical schemes for optimal control and viability theory. Initiated research on robust portfolio optimization under uncertainty using ODE/PDE models.

Advisor : **Prof. Hassna Zidani**, *INSA Rouen Normandy, France*

Teaching Assistantship

2025–present, 2022–2023 — ***Adjunct Lecturer***, Faculty of Economics and Management, Agdal, Rabat.
Taught undergraduate courses (Licence) in Statistics, Financial Mathematics, and Linear Algebra.

2024–2025 — ***Adjunct Lecturer***, INSA Rouen Normandy, France, Conducted part of the course *Stochastic Optimal Control and Applications in Finance* (TD).
Topics included stochastic processes, Itô calculus, Hamilton–Jacobi–Bellman equations, viscosity solutions, and numerical methods for PDEs in finance.

2021–2024 — ***Adjunct Lecturer***, Faculty of Sciences, Mohammed V University, Rabat.
Taught General Mathematics (L1) and conducted practical sessions (TP) in Optimization (L3).

Academic Achievements & Recognitions

2024 — Invited talk at **International Conference on Optimization (ICOP 24)**, Fez, Morocco. Title: *Dynamic Decision Modeling for Pricing Policy: A Viability Approach*.

2022 — Invited talk at **Chemnitz Finite Element Symposium**, Germany. Title: *Optimal Control Approaches to Dynamic Pricing in Technology Markets*.

2022 — Invited talk at **DySyX'2022 Workshop**, Ibn Tofail University, Morocco. Title: *Optimal pricing policy in a competitive market*.

Computer skills

Programming — Python, MATLAB, R

Statistical Tools — STATA, SPSS

Mathematical Expertise — Optimal Control, Hamilton–Jacobi–Bellman Equations, Numerical Analysis, Partial Differential Equations

Applied Methods — Machine Learning, Econometrics, Mathematical Modeling, Operations Research

Professional Activities

Reviewer — *Information Sciences* (Elsevier), 2026.

Reviewer — *OPSEARCH* (Springer Nature), 2025.

Referees

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