Rémy Hosseinkhan-Boucher

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 LinkedIn
 GitHub
 Math StackExchange

Education

2021–2024*   **Université Paris-Saclay**

Ph.D. Candidate in Computer Science
  On Learning-based Control of Dynamical Systems: Application to Computational Fluid Dynamics
  Advisors: Anne Vilnat, Onofrio Semeraro, Lionel Mathelin

2014–2020   **Université Paris Dauphine - PSL**

M.Sc. in Artificial Intelligence, Systems, Data
  Statistical Learning, Markov Decision Processes, Parallel Computing

M.Sc. in Statistics and Data Analysis for Financial Engineering
  Time Series Analysis, Stochastic Calculus, Nonparametric Statistics

B.Sc. in Applied Mathematics
  Advanced Probability Theory, Stochastic Processes, Parametric / Bayesian Statistics

Experience

2020–2021   **Inria TAU (TAckling the Underspecified), IFP Énergies Nouvelles** - Gif-sur-Yvette, France
Research Intern
  Learning-based methods for solving stiff differential equations. Koopman operator theory and Physics Informed Neural Networks (PINNs).
  Advisors: Michele Alessandro Bucci, Thibault Faney, Cédric Mehl

2019–2020   **BNP Paribas Real Estate** - Issy-les-Moulineaux, France
Data Scientist
  Cluster analysis using k-means and Gaussian mixtures. Temporal analysis of clusters inspired by NLP-based dynamic word embeddings. Exploratory data analysis, feature engineering, and variable selection with ANOVA and PCA.

2019   **Capital Fund Management (CFM)** - Paris, France
Quantitative Research Intern
  Anomaly detection methods for financial time series. Modeling with ARIMA, GARCH, and Facebook PROPHET. Parameter estimation of heavy-tailed distributions (Levy).

2018   **Luxurynsight** - Paris, France
Deep Learning Research Intern
  Deep learning models for Natural Language Processing (NLP) tasks with RNN, GRU, LSTM neural networks. Embedding techniques and multi-class classification.

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*Expected.

Publications

G Google Scholar
iD ORCID

Peer-reviewed Conference Proceedings

C1. **Hosseinkhan Boucher, Rémy**, Douka, S., Semeraro, O. & Mathelin, L. *Increasing information for model predictive control with semi-Markov decision processes* in *Proceedings of the 6th Annual Learning for Dynamics & Control Conference* (eds Abate, A., Cannon, M., Margellos, K. & Papachristodoulou, A.) **242** (PMLR, July 2024), 1400–1414. `https://proceedings.mlr.press/v242/hosseinkhan-boucher24a.html`.

C2. **Hosseinkhan Boucher, Rémy**, Semeraro, O. & Mathelin, L. *Evidence on the Regularisation Properties of Maximum-Entropy Reinforcement Learning* in *Proceedings of the 7th International Conference on Optimization and Learning* (eds Dorronsoro, B., Chicano, F., Danoy, G. & Talbi, E.-G.) (May 2024).

Working papers

W1. **Hosseinkhan Boucher, Rémy**, Monsel, T., Semeraro, O. & Mathelin, L. *Continuous-Time Reinforcement Learning: Modeling Dynamics Delays with Neural Delay Differential Equations* 2025.

Tools & Software

Library

`control_dde`: Learning-based control for delay-differential systems.

Skills

Programming: Python, C++, R, Java, Scala, Bash

Tools: Git, Docker, Singularity, MLFlow, Hydra, Slurm

Frameworks: TensorFlow, PyTorch, Spark, Hadoop

Other: LaTeX, Markdown, Jupyter

Presentations

Talks[*]

T1. **Hosseinkhan Boucher, Rémy**. *Challenges in Learning Based Control for Dynamical Systems: Maximum Entropy and Mutual Information* Inria TAU Seminar Series. Feb. 2024.

T2. **Hosseinkhan Boucher, Rémy**. *Robustness of Maximum-Entropy Reinforcement Learning* SIAM Conference on Science and Engineering. Feb. 2023.

T3. **Hosseinkhan Boucher, Rémy**. *A Reinforcement Learning Application to Chaotic Dynamical Systems* European Drag Reduction and Flow Control Meeting. Sept. 2022.

Teaching

ENS Paris-Saclay

2024   *Teaching Assistant, Advanced Deep Learning (MVA Program)*
Advanced deep learning concepts to MVA (Math Vision Apprentissage) Master's students.
Machine Learning for Physics and Computer Vision.
Principal Lecturer: G. Charpiat.

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[*]Excludes conference presentations.

Université Paris-Saclay

2022–2023	*Teaching Assistant, C++ Programming*
	Object-oriented programming (OOP) to 1st-year students.
	Principal Lecturers: C. Balkanski, H. Bonneau.

CentraleSupélec

2022	*Teaching Assistant, Data Science Project Class*
	Guided 2nd-year students in their data science project on adversarial robustness for deep learning classifiers.
	Partnership with IRT SystemX. Principal Lecturer: W. Ouerdane.

Academic Advising

Internships

2023	*Stella Douka, Université Paris-Saclay, M.Sc. in Artificial Intelligence*
	Topic: Gausian Process based Model Predictive Control with Mutual Information criterion.
	Led to a publication in the Proceedings of Machine Learning Research (PMLR).
	Role: Co-advisor with L. Mathelin and O. Semeraro

Academic Service

Peer Review

2023	IEEE Transactions on Automatic Control
2024	European Workshop on Reinforcement Learning
2024	Journal of Fluid Mechanics

Other Experience

2015	**Europ Assistance**
	Assistance Agent
	Processed customer calls based on individual insurance contracts.
	Managed correction and tracking of cases until closure, transmitting data to partners.

2014	**Hilton**
	Room Attendant at Day's Inn
	Worked in Florida for 3 months as a housekeeper and breakfast waiter, enhancing English proficiency and adapting to new cultures (Visa J1).

Last updated: January 30, 2025