R A P H A Ë L
REYNOUARD

CONTACT

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ABOUT ME

I am a researcher specialising in **machine learning**, with a PhD focused on **Markov models**. I have extensive experience in **Python**, demonstrated through the development of the Jajapy library. My recent postdoc at Eawag involved applying **deep learning** methods to **hydrology**, where I acquired strong skills in **PyTorch**. I bring a robust background in statistical modelling, algorithm development, and practical data analysis.

EDUCATION & CAREER

Postdoc Researcher   2024
Eawag | Dübendorf, Switzerland

- Field: Machine Learning & Hydrology
- Supervisor: Fabrizio Fenicia
- Topic: Developed deep learning and generative AI methods for structure learning and parameter estimation of bucket models.

PhD in Computer Science   2020-2023
Háskólinn í Reykjavík | Reykjavík, Iceland

- Field: Machine Learning & Model Checking
- Supervisor: Anna Ingólfsdóttir & Giovanni Bacci
- PhD Thesis: On learning stochastic models: from theory to practice
- Topic: Developed and implemented unsupervised machine learning methods for parameter estimation of Markov models.

BA & MSc in Computer Science   2015-2020
Université Libre de Bruxelles | Brussels, Belgium

- Graduated with *Disctinction*
- Thesis topic: "Learning of Non-Markovian Reward Functions"
- Supervisor: Jean-François Raskin.

SKILLS

● ● ●	Python, PyTorch, LaTeX, Linux
● ● ○	R, SQL

● ○ ○   Arduino, Java, C/C++

Languages   • French (Native)
                     • English (Full professional proficiency)
                     • German (Basic)

REFERENCES

Grey Nearing   Senior Research Scientist
                     Google
                     Mountain View, California, US
                     gsnearing@google.com

Giovanni   Associate Professor
Bacci   Department of Computer Science
                     Aalborg University
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Kim G.   Professor
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                     Department of Computer Science
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PUBLICATIONS

R. Reynouard, A. Ingólfsdóttir, and G. Bacci (2023). "Jajapy: a learning library for stochastic models". In: *Quantitative Evaluation of Systems - 20th International Conference, QEST 2023, Antwerp, Belgium, September 18-23, 2023, Proceedings*. Ed. by Nils Jansen Mirco Tribastone. Lecture Notes in Computer Science. Springer.

Bacci, G., A. Ingólfsdóttir, K. G. Larsen, and **R. Reynouard** (2021). "Active Learning of Markov Decision Processes using Baum-Welch algorithm". In: *20th IEEE International Conference on Machine Learning and Applications, ICMLA 2021, Pasadena, CA, USA, December 13-16, 2021*. IEEE, pp. 1203–1208. DOI: 10.1109/ICMLA52953.2021.00195.

– (2023). "An MM Algorithm to Estimate Parameters in Continuous-time Markov Chains". In: *Quantitative Evaluation of Systems - 20th International Conference, QEST 2023, Antwerp, Belgium, September 18-23, 2023, Proceedings*. Ed. by Nils Jansen Mirco Tribastone. Lecture Notes in Computer Science. Springer.

Rens, G., J.-F. Raskin, **R. Reynouard**, and G. Marra (2021). "Online Learning of non-Markovian Reward Models". In: *Proceedings of the 13th International Conference on Agents and Artificial Intelligence, ICAART 2021, Volume 2, Online Streaming, February 4-6, 2021*. SCITEPRESS, pp. 74–86. DOI: 10.5220/0010212000740086.

TOOLS

Jajapy   since 2021
A Python learning library for Markov models

- Open source Python library
- Implementing several learning methods for stochastic models
- Compatible with the model checkers Storm and Prism
- Github: https://github.com/Rapfff/jajapy
- Documentation: https://jajapy.readthedocs.io/en/latest/index.html.

RESEARCH ACTIVITIES

QEST+FORMATS'24   2024
Artifact Evaluation Committee member

QEST'23   2023
Artifact Evaluation Committee member

AWARDS

Babbage Prize   2020

- Each year, the Babbage Association awards the Babbage Prize to a student who has graduated from a Master's degree in Computer Science at ULB and who has distinguished himself as much by his commitment to the student community as by the excellence of his academic career.

MISCELLANEOUS

Mathematics tutoring   since 2016

- Tutoring in mathematics for middle and high school students
- More than 20 students.

Scout Leader   2016-2020
Belgium

- Scoutmaster of a Belgian group
- From 2018 to 2020, head of the boys' group (60-70 children).