



# Jérôme Eertmans

Ph.D. student in Differentiable Ray Tracing for Telecommunications

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🎓 Google Scholar

## Education

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**Université catholique de Louvain**, Ph.D. in Electrical engineering Sept 2021 – June 2026  
Thesis title: Differentiable Ray Tracing for Telecommunications

**Université catholique de Louvain**, M.Sc. in Electro-mechanical engineering Sept 2019 – June 2021  
Majored in mechatronics.

- I undertook a variety of course topics: telecommunications, open source software, numerical simulations, digital design of ICs, machine learning, mining pattern in data, etc., for a total of 112% workload.
- Graduated Magna Cum Laude.

## Experience

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**Teaching Assistant**, Université catholique de Louvain – Louvain-la-Neuve, Belgium Sept 2021 – present

- Teaching duties (practical sessions, evaluation, ...): see list [here](#)
- Research on my Ph.D. subject, under the supervision of Profs. Claude Oestges and Laurent Jacques.

**Visiting Researcher**, University of Bologna – Bologna, Italy Sept 2024 – Dec 2024  
Visiting Prof. Vittorio Degli-Esposti's lab and pursuing research on Machine Learning applied to Ray Tracing for Radio Propagation.

For additional experiences, see my [LinkedIn profile](#).

## Languages

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**French:** Native

**English:** B2+/C1

**Dutch:** B1

**Italian:** A2

**Japanese:** Basics

## Projects

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### DiffeRT

Python package with backend written in Rust.

- Built on top of [JAX](#) for high-performance and differentiable code
- Thoroughly tested and well documented
- Fully open access, along with its 2D variant [DiffeRT2D](#)

## Manim Slides

Presentation tool I developed to produce higher-quality presentations at conferences.

- Most of my presentations are created using this tool and can be viewed on [my personal website](#)
- Used by other researchers to disseminate their research, with examples available in the [documentation](#)

## More projects

You may find an extended list of my projects and contributions on my [GitHub profile](#) or on the [projects page](#) of my website.

## Publications

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- Transform-Invariant Generative Ray Path Sampling for Efficient Radio Propagation Modeling** Mar 2026  
**J rome Eertmans**, Enrico Maria Vitucci, Vittorio Degli-Esposti, Nicola Di Cicco, Laurent Jacques, Claude Oestges  
[arxiv.org/abs/2603.01655](https://arxiv.org/abs/2603.01655) (arXiv preprint, submitted to npj Wireless Technology)
- Fast, Differentiable, GPU-Accelerated Ray Tracing for Multiple Diffraction and Reflection Paths** Oct 2025  
**J rome Eertmans**, Sophie Lequeu, Beno t Legat, Laurent Jacques, Claude Oestges  
[arxiv.org/abs/2410.14535](https://arxiv.org/abs/2410.14535) (arXiv preprint, accepted at EuCAP 2026)
- Towards Generative Ray Path Sampling for Faster Point-to-Point Ray Tracing** Oct 2024  
**J rome Eertmans**, Nicola Di Cicco, Claude Oestges, Laurent Jacques, Enrico Maria Vitucci, Vittorio Degli-Esposti  
[10.1109/ICMLCN64995.2025.11140249](https://doi.org/10.1109/ICMLCN64995.2025.11140249) (2025 IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN))
- Comparing Differentiable and Dynamic Ray Tracing - Introducing the Multipath Lifetime Map** Oct 2024  
**J rome Eertmans**, Enrico Maria Vitucci, Vittorio Degli-Esposti, Laurent Jacques, Claude Oestges  
[10.23919/EuCAP63536.2025.10999736](https://doi.org/10.23919/EuCAP63536.2025.10999736) (2025 19th European Conference on Antennas and Propagation (EuCAP))
- Fully Differentiable Ray Tracing via Discontinuity Smoothing for Radio Network Optimization** Mar 2024  
**J rome Eertmans**, Laurent Jacques, Claude Oestges  
[10.23919/EuCAP60739.2024.10501570](https://doi.org/10.23919/EuCAP60739.2024.10501570) (2024 18th European Conference on Antennas and Propagation (EuCAP))
- DiffeRT2d - A Differentiable Ray Tracing Python Framework for Radio Propagation** June 2024  
**J rome Eertmans**, Claude Oestges, Laurent Jacques  
[10.21105/joss.06915](https://doi.org/10.21105/joss.06915) (Journal of Open Source Software)
- Min-Path-Tracing - A Diffraction Aware Alternative to Image Method in Ray Tracing** Mar 2023  
**J rome Eertmans**, Claude Oestges, Laurent Jacques  
[10.23919/EuCAP57121.2023.10132934](https://doi.org/10.23919/EuCAP57121.2023.10132934) (2023 17th European Conference on Antennas and Propagation (EuCAP))
- Manim Slides - A Python package for presenting Manim content anywhere** Aug 2023  
**J rome Eertmans**  
[10.21105/jose.00206](https://doi.org/10.21105/jose.00206) (Journal of Open Source Education)

## Grants and Awards

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<b>Best Propagation Paper Award – Dublin, IE</b> EurAAP - EuCAP 2026.	Apr 2026
<b>TICRA-EurAAP Travel Grant – Dublin, IE</b> EuCAP 2026 travel grant.	Apr 2026
<b>Long-term Scientific Stay in Pr. Vittorio Degli-Esposti's team (FNRS) – Brussels, BE</b> FRS FNRS <i>Accomplishment of a stay abroad.</i>	Sept 2024 – Dec 2024
<b>Long-term Scientific Stay in Pr. Vittorio Degli-Esposti's team (WBI) – Brussels, BE</b> WBI <i>Bourses d'Excellence WORLD.</i>	Sept 2024 – Dec 2024
<b>STSM CA20120 - Visit to Pr. Vittorio Degli-Esposti – Brussels, BE</b> Cost Action Short-term Scientific Missions.	Apr 2024
<b>Participation in EuCAP 2024 – Brussels, BE</b> FRS FNRS <i>Participation in a scientific meeting.</i>	Mar 2023

## Personal Achievements

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**ADE Scheduler:** An open source alternative to UCLouvain's scheduling tool, that became the official university tool in Sep. 2024.

**Manim Slides:** An open source presentation tool, used by many for teaching, conference presentations, or thesis defenses.

**Scouts:** 6 years as a scout (Les Scouts) leader.

## Reviews

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**EuCAP:** EuCAP 2026 (5 reviews)

**IEEE:** Access (5 reviews), Transactions on Vehicular Technology (6 reviews), Antennas and Wireless Propagation Letters (1 review), and Open Journal of the Communications Society (1 review)

**Journal of Open Source Software:** 1 review (see [#9384](#))

**Nature Partner Journals: Wireless Technology:** 1 review

## Referees

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**Prof. Claude Oestges, Université catholique de Louvain:** [claudio.oestges@uclouvain.be](mailto:claudio.oestges@uclouvain.be)

**Prof. Laurent Jacques, Université catholique de Louvain:** [laurent.jacques@uclouvain.be](mailto:laurent.jacques@uclouvain.be)

**Prof. Vittorio Degli-Esposti, University of Bologna:** [v.degliesposti@unibo.it](mailto:v.degliesposti@unibo.it)