# Merlin Nimier-David

*Senior Research Scientist at NVIDIA*

merlin.nimier@gmail.com
Merlin Nimier-David
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## Education

2017–2022 **PhD student**, *Swiss Federal Institute of Technology (**EPFL**)*, Lausanne.
Realistic Graphics Laboratory, advised by Prof. Wenzel Jakob.
Focus: high-performance physically based **differentiable rendering** algorithms, systems and applications.
Contributed to the creation of the Mitsuba 2 differentiable rendering system.

2014–2017 **Master in Computer Science**, *Swiss Federal Institute of Technology (EPFL)*, Lausanne.
Computer Graphics, Machine Learning, Big Data, Markov Chains, Natural Language Processing, Intelligent Agents, Concurrent Algorithms, Distributed Systems, Functional Programming. GPA: $5.79/6$.

2013–2014 **Bachelor in Computer Science Engineering**, *INSA Lyon, France*.
Ranked first among computer science students.
Software Engineering, Concurrent Programming, UNIX, Networks, Databases, Linear Algebra.

2011–2013 **Science foundation courses**, *INSA Rouen, France*.

## First-authored publications

2023 **Adaptive Shells for Efficient Neural Radiance Field Rendering**.
Zian Wang*, Tianchang Shen*, Merlin Nimier-David*, Nicholas Sharp, Jun Gao, Alexander Keller, Sanja Fidler, Thomas Müller, Zan Gojcic (*equal contribution).
☆ Best papers award
Project In Transactions on Graphics (Proceedings of SIGGRAPH Asia 2023).

2022 **Differentiable Physically Based Rendering: Algorithms, Systems and Applications**.
PhD thesis, advised by Prof. Wenzel Jakob.
Thesis

2022 **Unbiased Inverse Volume Rendering with Differential Trackers**.
Merlin Nimier-David, Thomas Müller, Alexander Keller, Wenzel Jakob.
Project Talk In Transactions on Graphics (Proceedings of SIGGRAPH 2020).

2021 **Material and Lighting Reconstruction for Complex Indoor Scenes with Texture-space Differentiable Rendering**.
Merlin Nimier-David, Zhao Dong, Wenzel Jakob, Anton Kaplanyan.
☆ Best presentation award
Project Talk In Proceedings of EGSR 2021.

2020 **Radiative Backpropagation: An Adjoint Method for Lightning-Fast Differentiable Rendering**.
Merlin Nimier-David, Sébastien Speierer, Benoît Ruiz, Wenzel Jakob.
Project Talk In Transactions on Graphics (Proceedings of SIGGRAPH 2020).

2019 **Mitsuba 2: A Retargetable Forward and Inverse Renderer**.
Merlin Nimier-David*, Delio Vicini*, Tizian Zeltner, Wenzel Jakob (*joint first authors).
Project Talk In Transactions on Graphics (Proceedings of SIGGRAPH Asia 2019).

## Fellowships & awards

2020–2022 **Facebook Graduate Fellowship**.
Program designed to "encourage and support promising doctoral students who are engaged in innovative and relevant research in areas related to computer science and engineering". 2% of applicants were selected.

2017 **EPFL EDIC fellowship**.
Funds the first year of PhD studies.

2011–2013 **Euris Foundation Scholarship**.
Merit-based scholarship supporting the first two years of higher education.

## Experience

2022–present **Senior Research Scientist**, *NVIDIA*.
Member of Alexander Keller's team.

2020–present **Technical Papers Reviewer**.
SIGGRAPH 2020 & 2022, SIGGRAPH Asia 2020 & 2021, HPG 2021 paper committee member.

June–Sep 2020 **Research Intern**, *NVIDIA*.
- Advised by Alexander Keller and Thomas Müller.

June–Sep 2019 **Research Intern**, *Facebook Reality Labs*.
- Advised by Anton Kaplanyan.
- Differentiable GPU rendering for joint material and lighting estimation from real photographs.

2015–2021 **Teaching Assistant (Master and Bachelor level)**, *EPFL*.
Advanced Computer Graphics, Numerical Algorithms for Visual Computing, Machine Learning, ...

Feb–Aug 2017 **Master Thesis**, *Cornell University*.
- *Rendering Procedural Microstructure using Adaptive Gaussian Processes*
- Advised by Steve Marschner, Bruce Walter and Wenzel Jakob.
- Physically Based Rendering: appearance modeling for complex specular microstructure using procedural generation and Gaussian Processes.

Fall 2016 **Software Engineer Intern in Research**, *Google Research*.
- Computational Imaging team led by Peyman Milanfar, co-supervised by Michael Elad.
- Researched, implemented and optimized an experimental style-transfer algorithm.

2016 **Research assistant**, *Realistic Graphics laboratory*, EPFL.
- Early development of the Mitsuba 2 open-source research renderer.

2015–2016 **Research assistant**, *Computer Graphics & Geometry laboratory*, EPFL.
- Advised by Alexandru-Eugen Ichim and Prof. Mark Pauly.
- Designed and assembled a photogrammetry rig capable of scanning human facial expressions into high-quality 3D meshes in order to collect training data.

Summer 2015 **Software Engineer Intern**, *Google*.
- Measurably improved Google Search backend performance using statistical methods.
- Quickly familiarized with a highly complex C++ codebase, internal tools & libraries.
- Shipped Google-scale, production-ready code.

Summer 2014 **Software Engineer Intern**, *AnyFetch*.
- Designed and implemented a Node.js library used as a foundation for all client apps.

2011–2013 **Founding member**, *Quantic Telecom*.
- Grew from 0 to 600+ members to become France's largest non-profit Internet Service Provider.
- Designed and developed signup process, user experience, members management tools.

## Side projects

2018–2019 Competed in computer security competitions (CTFs) with team `polygl0ts` (founding member).

2014 Competed in SWERC 2014 (ACM ICPC – international programming contest).

2014, 2013 Won French hackathons Fhacktory and Hack Hours.

Hobbies Computer security, photography, music production, graphic design.

## Skills

Programming
- **C++**, CUDA
- **Python** & bindings (pybind11)
- Mathematica, Matlab, LaTeX
- Scala, Java, JavaScript (Node.js)
- HTML5, CSS3, PHP, SQL

Languages
- French (native)
- **English** (fluent – TOEIC 990/990)
- Spanish (beginner)

Systems
- Debian, OSX, Bash scripting
- API design

Code quality
- Tests and documentation
- Continuous integration, code reviews