



# Delio Vicini

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## Core experience

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- Jan. 2023 - present **Senior research scientist, Google AR (Nov. 2024 - present)**  
**Research scientist, Google AR (Jan. 2023 - Nov. 2024)**  
Research and development on inverse rendering, appearance reconstruction, digital humans, synthetic data generation and optical simulation for AR/VR.
- 2017 – 2022 **PhD student, EPFL Realistic Graphics Lab (supervised by Prof. Wenzel Jakob)**  
Research on physically-based differentiable rendering, volumetric scene representation, geometry reconstruction and machine learning for rendering. I also contributed significantly to the Mitsuba open-source research renderer.
- 2019 **Research intern, Facebook Reality Labs (5 months)**  
Internship in the FRL graphics team on volumetric scene representations.
- 2017 **Master thesis, Disney Research / ETH Zurich (Prof. Markus Gross) (6 months)**  
Master thesis on gradient-domain volumetric path tracing (grade 6.0/6.0).
- 2016/2017 **Research intern, Walt Disney Animation Studios / Disney Research (3 months)**  
Internship on denoising rendered deep images.
- 2016 **Research intern, Disney Research (3 months)**  
Internship on denoising for Monte Carlo rendering using local regression methods.
- 2015 **Bachelor thesis, University of Bern (Prof. Matthias Zwicker) (6 months)**  
Bachelor thesis on image filtering using Halide and denoising for gradient-domain rendering (grade 6.0/6.0).

## Education

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- Sep. 2017 – Oct. 2022 **Swiss Federal Institute of Technology in Lausanne (EPFL)**  
PhD in computer science
- 2015 – 2017 **Swiss Federal Institute of Technology in Zurich (ETH Zurich)**  
M. Sc. in computer science (with focus on visual computing)  
GPA: 5.92 / 6.00 (graduation with distinction)
- 2012 – 2015 **University of Bern**  
B. Sc. in computer science and mathematics, minor in history  
GPA: 5.91 / 6.00 (Summa Cum Laude)

## Additional experience

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- 2019 – present **Program committee member & reviewer**  
SIGGRAPH Asia 2024 IPC, EGSR 2023 IPC, EGSR 2024 IPC and Eurographics 2024 IPC.  
Reviewing for SIGGRAPH/SIGGRAPH Asia/Transactions on Graphics, Computer Graphics Forum, The Visual Computer, Computers & Graphics.
- 2017 – present **Teaching assistant, EPFL**  
Teaching assistant for numerical methods and advanced computer graphics. Supervision of student projects on denoising for differentiable rendering, neural path guiding, Monte Carlo PDE solvers, light sampling hierarchies, Disney BSDF, and geometry instancing.

2014/2015

**Teaching assistant, University of Bern**

Teaching assistant for Analysis 1, Analysis 2 and Computer Architecture

## Expertise

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<b>Analytical</b>	Computer graphics, physically-based and differentiable rendering, volume rendering, Monte Carlo methods, optimization, denoising, neural networks, real-time rendering
<b>Programming</b>	C++, Python, CUDA, Nanobind/PyBind11, Jax, PyTorch, Tensorflow, CMake, OpenGL, GLSL, HTML, CSS, Typescript
<b>Tools</b>	Git, Linux, Blender, Maya, Photoshop, Illustrator, DaVinci Resolve, LaTeX
<b>Languages</b>	English (proficient), German (native speaker), French (intermediate)

## Honors and awards

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Invited speaker at UCL high-beams seminar (2024) and VIS conference (2019, 2021), EPFL EDIC Fellowship (2017), Google Hash Code programming competition finalist (2016), 1<sup>st</sup> place physically-based simulation project competition (ETH Zurich, 2015), 2<sup>nd</sup> place rendering competition (ETH Zurich, 2015)

## Publications

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2024	E. Yilmazer, <b>D. Vicini</b> , W. Jakob. <b>Solving Inverse PDE Problems using Monte Carlo Estimators</b> , ACM Trans. Graph. (SIGGRAPH Asia).
2023	K. Sarkar, M. Buehler, G. Li, D. Wang, <b>D. Vicini</b> , J. Riviere, Y. Zhang, S. Orts-Escolano, P. Gotardo, T. Beeler, A. Meka. <b>LitNeRF: Intrinsic Radiance Decomposition for High-Quality View Synthesis and Relighting of Faces</b> , SIGGRAPH Asia (conference track).
2022	<b>D. Vicini</b> , S. Speierer, W. Jakob, <b>Differentiable Signed Distance Function Rendering</b> , ACM Trans. Graph. (SIGGRAPH).
2022	W. Jakob, S. Speierer, N. Roussel, <b>D. Vicini</b> , <b>Dr.Jit: A Just-In-Time Compiler for Differentiable Rendering</b> , ACM Trans. Graph. (SIGGRAPH).
2021	<b>D. Vicini</b> , S. Speierer, W. Jakob, <b>Path Replay Backpropagation: Differentiating Light Paths using Constant Memory and Linear Time</b> , ACM Trans. Graph. (SIGGRAPH).
2021	<b>D. Vicini</b> , W. Jakob, A. Kaplanyan, <b>A Non-Exponential Transmittance Model for Volumetric Scene Representations</b> , ACM Trans. Graph. (SIGGRAPH).
2019	M. Nimier-David*, <b>D. Vicini*</b> , T. Zeltner, W. Jakob, <b>Mitsuba 2: A Retargetable Forward and Inverse Renderer</b> , ACM Trans. Graph. (SIGGRAPH Asia), *joint first authors.
2019	<b>D. Vicini</b> , V. Koltun, W. Jakob, <b>A Learned Shape-Adaptive Subsurface Scattering Model</b> , ACM Trans. Graph. (SIGGRAPH).
2018	<b>D. Vicini</b> , D. Adler, J. Novák, F. Rousselle, B. Burley, <b>Denoising Deep Monte Carlo Renderings</b> , Computer Graphics Forum, 2018.
2016	M. Manzi, <b>D. Vicini</b> , M. Zwicker: <b>Regularizing Image Reconstruction for Gradient-Domain Rendering with Feature Patches</b> , Computer Graphics Forum (Eurographics).