# Emilie Nogué

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Marie Skłodowska-Curie PhD fellow in computer graphics specializing in computational photography, appearance modeling, and wave-optical effects. Experienced in simulation and inverse rendering for imaging and material appearance analysis. Skilled in interdisciplinary collaborations developing a publication record spanning polarization imaging, spectral imaging, fluorescence measurement, and computational techniques for material/skin appearance.

## Education

**Imperial College London - Realistic Graphics and Imaging Group** — London, UK

*PhD candidate, Data-Driven Wave-Optical Material Appearance Modeling and Rendering* — *Dec 2020 – 2025*

- Developed wave-optical models for material appearance, focusing on fluorescence and polarization effects.
- Designed and optimized experimental setups for capturing wave-optical phenomena, including skin fluorescence and blood distribution analysis.
- Implemented inverse rendering techniques to estimate optical properties from sparse imaging data.
- Explored efficient rendering strategies for complex wave-optical effects in realistic visualization applications.

**Institut d'Optique Graduate School** — Palaiseau, France

*French Engineering Diploma (Master's Degree)* — *Sept 2017 – Oct 2020*

- Specialized in photonics and optics with 135 hours of experimental practice in linear/non-linear optics, electromagnetism, quantum mechanics, radiometry, lasers, and sensor physics.
- Focused on computing in the 2nd year at Institut Optique d'Aquitaine: image processing, algorithmics, GPU programming, geometry modeling, and display technologies.
- Innovation and Entrepreneurship Track (500 hours) with projects in physics-based software development.

**CPGE Lycée Joffre** — Montpellier, France

*Preparatory Classes for « Grandes Écoles », Mathematics and Physics* — *Sept 2014 – June 2017*

- Intensive three-year program preparing for competitive entrance exams to France's prestigious 'Grandes Écoles.' Covered advanced mathematics, physics, and engineering with a demanding schedule of up to 55 contact hours weekly, including tutorials and oral exams.

**Lycée Le Caousou** — Toulouse, France

*Baccalaureate - European Section English / French, Science Track* — *2014*

## Honors & Awards

- WiGRAPH Rising Star Program (2023) – Recognized as an emerging researcher in computer graphics.
- Marie Skłodowska-Curie Fellowship (PRIME ITN, European Commission, 2020–2024).

## Experience

**Research Internship, Adobe** — Paris, France

*Research Intern* — *Feb 2024 – July 2024*

- Surface appearance measurement and modeling from polarized imaging.
- Mentored by Adrien Kaiser, Jerome Derel and Valentin Deschaintre.

**Research Secondment, EPFL** — Lausanne, Switzerland

*Visiting Researcher* — *June 2023 – Sep 2023*

- Bidirectional Texture Function acquisition in the Realistic Graphics Lab.

**Research Secondment, Charles University** Prague, Czech Republic
*Visiting Researcher* *March 2022 – July 2022*

- Exploration of modeling of wave-optical effects such as fluorescence
- Enhancement of spectral measurements for translucent materials [Publication: Transaction on Graphics 2022].

**ONERA, the French Aerospace Lab** Toulouse, France
*Intern* *Feb 2020 – July 2020*

- Brainstormed and iterated measurement setups for LiDAR acquisition
- Programmed in C++ for the automatic processing of 3D LiDAR signal on Ubuntu and Mac
- Assisted inplane acquisition of LiDAR signals
- Processed large databases of point clouds from an acquisition campaign
- Coordinated and oversaw ground acquisition of LiDAR signal with real time signal processing

**FittingBox** Toulouse, France
*Intern* *May 2019 – Aug 2019*

- Conducted real-time testing of ocular measurements
- Converted Matlab experimental program to C++ architecture for commercialisation purposes
- Designed C++ algorithms for augmented reality
- Carried out market intelligence on competitive technologies
- Project management.

**University of Victoria** Victoria, BC, Canada
*Intern Research Assistant* *June 2018 – Aug 2018*

- Experimented use of optical tweezers for molecular analysis relating to the detection and quantification of protein-DNA interactions in the fight against genetic diseases
- Developed a Matlab setup interface for signal processing
- Observed nanoplasmonic effects on DNA
- Operated optical tweezers to align laser and capture DNA.

## Entrepreneurship

*Lumirithmic* *2021-2024*

Developer and researcher for an Imperial College spin-out company. Lumirithmic is a deep tech startup focusing on graphics, vision, and machine learning.

- **Projects:**
  - **Polarization Imaging for Surface Reflectometry:** Developed a polarization-imaging pipeline [Publication: Eurographics Symposium on Rendering (2022)].
  - **Skin Imaging and Fluorescence Measurement:** Designed and implemented a skin imaging system for fluorescence and blood distribution analysis [Publication: CIC32 (2024)].

*Asp9ct* *2018-2020*

Market research and development of a physics-based software for modeling and rendering of nanostructured surfaces. Conducted in partnership with researchers at LP2N (Bordeaux) and IOA professors: R. Pacanowski, K. Vynck and P. Lalanne.

*SecureLight* *2017-2018*

First start-up project: development of a laser-based device to improve visibility and security of cyclists under poor lighting conditions.

## Academic Activities

Reviewer for SIGGRAPH, SIGGRAPH Asia and Transactions on Graphics (TOG).

## Publications

- **Practical RGB Measurement of Fluorescence and Blood Distributions in Skin** **2024**
  *E. Nogue, A. Lin, X. Li, C. Guarnera, A. Ghosh*
  Color and Imaging Conference: CIC32

- **Polarization-imaging Surface Reflectometry using Near-field Display** **2022**
  *E. Nogue, Y. Lin, A. Ghosh*
  Eurographics Symposium on Rendering. The Eurographics Association 2

- **Affordable Spectral Measurements of Translucent Materials** **2022**
  *T. Š. Iser, T. Rittig, E. Nogué, T. K. Nindel, A. Wilkie*
  ACM Transactions on Graphics (TOG) 41 (6), 1-13

## Associations and committees

**Equality Diversity and Culture Committee** Imperial College London, London, UK
*PhD Representative* *February 2021 — now*

Working on the acquisition of grant for European Researchers Night at Imperial.

Working on the creation of EDI workshops for PhD cohorts outside of Imperial.

**Camp Thunderbird, YMCA** Victoria, BC, Canada
*Program Assistant* *June 2013 — August 2013*

Took care of children between the ages of 5 and 11

Developed and running activities such as arts and crafts, kayaking, canoeing, mass games, archery

Helped to supervise overnight backpacking out trips

## Other Skills

**Programming Languages:** Python, C++, Matlab, Shell scripting.
**Tools and Libraries:** OpenCV, Mitsuba2, Mitsuba3, pbrt, Blender, Unity, Git.
**Other Skills:** LaTeX, Excel, PointCloud Library.

**Spoken Languages**: French(Native), English(Fluent C2), Spanish(C1), Italian(Basic), Czech(Beginner), Ancient Greek (Basic)

**Certifications**:English language certification: TOEIC, IELTS, Cambridge English: Advanced; PSE1 (French First-Aid Certification)

**Interests**:Reading,Running, Hiking, Photography, Aerial Circus.