Dario Lanza

Computer Scientist Researcher

I am a fourth-year PhD student, currently working on finishing my studies. My research field is at the intersection between computer graphics and human perception. The objective of my PhD thesis is a better understanding of the perception and editing of translucent materials. This goal allowed me to design and oversee user-study experiments, as well as develop new authoring tools for more intuitive editing translucent materials (see section Publications). Additionally, I have experience in light transport simulation with participating media, which can be used in the generation of a synthetic database of translucent materials for machine-learning uses.

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Education

2017-2020
Master in Computer Graphics and Game Development
Univerzita Karlova (Prague, Czech Republic)
Final Grade: A

2014-2017
Bachelor in Computer Science
Politecnico di Torino (Turin, Italy)
Final Grade: 90/110

Expertise

- User Study Design
- Appearance Editing Algorithms
- Rendering Volumetric Media
- Monte - Carlo Algorithms
- Terrain Erosion simulation

Work Experience

28/02/2021 - Current
Universidad de Zaragoza
Doctorate in Computer Science

I pursue my Phd under the supervision of Prof. Belen Masia (http://webdiis.unizar.es/~bmasia/) and Dr. Adrian Jarabo (http://giga.cps.unizar.es/~ajarabo/) at University of Zaragoza, working within the Graphics And Imaging Lab (https://graphics.unizar.es/). My research field is at the intersection between computer graphics and human perception. The aim of my work is to simplify the editing of translucent materials.

08/01/2024 - 29/02/2024
Maxon GMB
Internship

In this 2-months internship, I have collaborated with Cinema 4D crew in developing real-time and intuitive tools for landscape authoring.

01/06/22 - 31/07/22
Denmark Technical University
Visiting Research Student

During my research stay at DTU, I have been supervised by Prof. Jeppe Revall Frisvad. The focus of the reseach stay was on the development of a new reflectance model to simulate cosmetic appearance.

Research Experience

Participation in Research Projects

01/03/2021 - 29/02/2024
PRIME ITN

PRIME is a European Training Network (ETN) for Early Stage Researchers in Computer Graphics. PRIME focuses on predictive Render Technologies, i.e. the generation of synthetic images that can be relied on to have the correct visual appearance. While these technologies have often been used in fields such as video games or film productions, PRIME takes a step further and aims to apply these technologies also in the manufacturing sector.

Link: https://prime-itn.eu/

Language

English (C1)

Spanish (B2)

Digital Skills

- Python
- C++
- OpenGL
- Github
- C##
- Matlab

Publications

On the Influence of Dynamic Illumination in the Perception of Translucent Materials
D.Lanza, A. Jarabo, B. Masia - SAP 2022

In this work [1], we investigate how the **perception of translucent material** is affected by the dynamic motion of light, in particular, if people are able to perceive better translucent materials as it has been shown for the case of glossy materials. We run a **user study** to assess this hypothesis. Unexpectedly, our results suggest that the **dynamic motion** of **light** does **not have an impact on perceived translucency**.

[1] Lanza, D., Jarabo, A., & Masia, B. (2022, September). On the Influence of Dynamic Illumination in the Perception of Translucency. In ACM Symposium on Applied Perception 2022 (pp. 1-9). DOI: https://doi.org/10.1145/3548814.3551462

Navigating the Manifold of Translucent Appearance
D.Lanza, B. Masia, A. Jarabo - Computer Graphics Forum (Eurographics 2024)

In this project [2], we develop an intuitive **manifold for translucent materials** that can be used for **non-expert users**. Although it is possible to produce synthetic images of translucent materials (e.g., wax, soap, biological tissues) it is often hard editing these synthetic materials to a specific appearance. In this work, we aim to simplify this editing process by using prior knowledge about the perception of translucent materials. We leverage this knowledge and **build** from it a **new interface** for editing this class of materials. We then run a **user study to evaluate objective** and **subjective** evaluation of the interface.

[2] Lanza, D., Masia, B., & Jarabo, A. (2024, April). Navigating the Manifold of Translucent Appearance. In Computer Graphics Forum (Vol. 43, No. 2, p. e15035).
DOI: http://dx.doi.org/10.1111/cgf.15035

Practical Appearance Model for Foundation Cosmetics
D.Lanza, J. Padron Griffe, A. Pranovich, A. Muñoz, J. Frisvad, A. Jarabo.

In this work, we focus on the development of a new reflectance model that can **simulate** the complex appearance of **cosmetic materials**. This is not a simple task, as there is little public knowledge of the optical properties of these materials. We revise previous work and propose a reflectance model based on a few observations. We then capture reflectance data to assess the capability of our model to reproduce reality. This can have potential applications for product pre-visualization and avatar creation.

[3] Lanza, D., Padrón-Griffe, J. R., Pranovich, A., Muñoz, A., Frisvad, J. R., & Jarabo, A. (2024, July). Practical appearance model for foundation cosmetics. In Computer Graphics Forum (Vol. 43, No. 4, p. e15148). DOI: https://doi.org/10.1111/cgf.15148

A Surface-based Appearance Model for Pennaceous Feathers.
J. Padron Griffe, D.Lanza, A. Jarabo, A. Muñoz

The goal of this project is to develop a new physically-based model that aims to simulate the **far-field appearance of feathers**, by taking into account different coloration mechanisms and its microgeometry structure.

[4] Padrón-Griffe, J. R., Lanza, D., Jarabo, A., & Muñoz, A. (2024, October). A Surface-based Appearance Model for Pennaceous Feathers. In Computer Graphics Forum (Vol. 43, No. 7, p. e15235). DOI: https://doi.org/10.1111/cgf.15235