

## PERMANENT CONTRACT JOB DESCRIPTION

### *Research Scientist in Optical Modeling*

#### RECRUTEMENT PROFILE

- MSc in Engineering, Computer Graphics, Computer Science or equivalent
- PhD or 3+ years of experience in aforementioned areas
- Knowledge of the physically-based modelling and rendering tools
- Knowledge of light-matter interactions, optical properties

#### I- AIM OF THE POSITION

We're on a mission: building the future of cosmetics.

For that, the key for success is bridging two universes: beauty and science and two categories of people: consumers and experts. From our data and knowledge gathered though decades, we are shaping concepts which will ultimately be transformed into cosmetic products.

You will propose, carry out and manage scientific research projects related to **appearance skin and hair**. Leveraging Computer Graphics tools will shed light on our data and knowledge by creating visual content interpretable by all project stakeholders. **Physically-based** tools are paramount to keep the physics of the concepts alive by connecting the modified appearance to the data and knowledge into ingredients and formula specifications. Appearance means a high level of contextualization, that is why your competences in Physically Based **Rendering** are of high interest.

Making effective products in this digital world is our big challenge ! We are fortunate to be at the crossroads of very many disciplines enabling us to push boundaries of science in a highly collaborative, creative and technical environment.

Most importantly, we are searching for science-driven, talented people with a consumer and user centric mindset to design and build the next generation of cosmetic products.

If this stimulates you , send us your application ! Contact: [etienne.huguet@rd.loreal.com](mailto:etienne.huguet@rd.loreal.com)

#### II- WORK ENVIRONMENT - RELATIONSHIPS

Specifically, you will integrate the Physical Simulation Group in the Digital Sciences Department part of the Advanced Research Division of L'Oreal R&I. Our common ground is driving physics to harness value in addressing appearance issues. Through a model-driven approach, the team infers **concepts** to protect or modify the appearance of skin and hair. This implies using multiscale (from microscopic target to holistic global appearance) and multi-physic (optics, mechanics, quantum chemistry) digital tools. A second step is to transform this concept into **specifications** used by our internal researchers thus producing cosmetic products. Several digital platforms are already implemented addressing different scales and physics.

All these tasks require working in a rich multidisciplinary environment within the full L'Oréal R&I ecosystem: chemists, biologists, mathematicians, physico-chemists, formulators,

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evaluators as well as our digital experts driving model- and data-driven approaches (statisticians, IA...).

You will work closely with our IT department and external Computer Graphics ecosystem (academics, companies) to deliver concepts and specifications by implementing, adapting or leveraging already existing engines, platforms, algorithms and applications.

#### **INTERNAL RELATIONS**

- All R&I divisions and departments, IT department

#### **EXTERNAL RELATIONS**

- Worldwide Universities and Research Institutes
- Computer Graphics ecosystem

### **III- DESCRIPTION OF THE MAIN ACTIVITIES**

The core of your activity is **not** to code algorithms but

- 1- to understand the questions based on the underlying physics and cosmetic environment
- 2- based on your knowledge of existing Computer Graphics solutions identify the relevant external partners (from academic groups to commercial solutions) or internal tools to address the question
- 3- Leverage these assets to deliver achievable solutions for our fellow researchers.

Your responsibilities will be to:

- 1- Partner with project leaders to decode the consumer insights on skin and hair appearance into technical brief
- 2- Explore different levers of action on skin and hair to define concepts based on the technical brief
- 3- Transform these concepts into specifications achievable by our research
- 4- Provide digital tools that empower each stakeholder in our R&I to improve decision making, increase effectiveness through automation and connect data and knowledge.
- 5- Develop, Promote and Assist the R&I community to use digital tools

### **IV- SKILLS**

#### **Required Skills / Experience**

- PhD or 3+ years experience on Computer Graphics or relevant areas
- Experience working with physically-based rendering, materials & lighting authoring
- Understanding the physics of light-matter interactions

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- Proficiency in communication with all disciplines and support and elevate the team
- Scientific rigor, Reliability

### **Desired Skills / Experience**

- Understanding of PBR, PBR pipelines, and subsurface shaders
- From Monte Carlo to Beer Lambert : experience in solving Radiative Transfer Equation
- Matlab or Scilab

### **LIFE SKILLS**

Ability to work in a multidisciplinary and multicultural team; ability to build and maintain a scientific network and federate people:

- These soft skills are key to designing, building and managing scientific projects in close collaboration with internal and external partners

Open mindedness, intellectual curiosity, pro-activite, self-confidence:

- To elaborate and share your convictions on how Computer Graphics can shape the cosmetics research of tomorrow.

For application to this permanent contract or any additional question, please contact:

[etienne.huguet@rd.loreal.com](mailto:etienne.huguet@rd.loreal.com)