Evaluation in Approximate Global Illumination Algorithms

From 2900 euros gross monthly (according to experience)

Benefits package
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities

Remuneration
From 2900 euros gross monthly (according to experience)

Context
There are currently several very effective global illumination algorithms that manage to simulate the majority of significant visual phenomena (e.g., [Georgiev12]), however they are far from real time. On the other end of the spectrum, there are real-time global illumination solutions (e.g., [McGuire17]) that usually achieve very approximate solutions, but at interactive or real-time framerates, and often with remarkable visual quality. These solutions are typically built on light probes or virtual point lights, that can be seen as a sampling of path space.

We will first analyze error in the different steps of these approximate algorithms, possibly modelling the error with statistical tools that handle uncertainty [Smi13]. This will require careful analysis starting with simple configurations, moving up to more complex cases. We will investigate the effect of discretization, both spatial and directional, and quantify the effect on the accumulated error, using statistical methods or alternatively data-driven learning-based methods.

Bibliography


https://dl.acm.org/citation.cfm?id=3023378


Assignment
Research activities (bibliography, initial research exploration) for the topic above.

Main activities
See above.

Skills
Good knowledge of Computer Graphics, knowledge of Computer Vision desirable, good knowledge of C++ and OpenGL/GLSL and equivalent.

General Information
- Theme/Domain: Interaction and visualisation
- Town/City: Sophia Antipolis
- Inria Center: CRI Sophia Antipolis - Méditerranée
- Starting date: 2018-10-01
- Duration of contract: 6 months
- Deadline to apply: 2018-11-04

Contacts
- Inria Team: GRAPHDECO (DRH)
- Recruiter: Drettakis George / george.drettakis@inria.fr

About Inria
Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”. Graduates from the world's top universities, Inria's 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

The keys to success
 Masters in Computer Graphics with some experience in research.

Conditions for application

Defence Security:
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy:
As part of its diversity policy, all Inria positions are accessible to people with disabilities.

Warning: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.