

Computer Graphics and Additive Manufacturing Engineer

Where : Inria Nancy Grand-Est (France)

Contact : sylvain.lefebvre@inria.fr

Duration : 18 months

Start date : September 2016

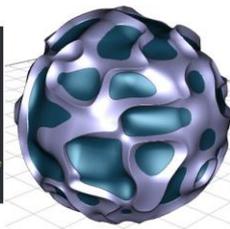
Salary : From 2530 € (before taxes), more with experience.

Who can apply? : Anyone with the right skills and motivation, worldwide.

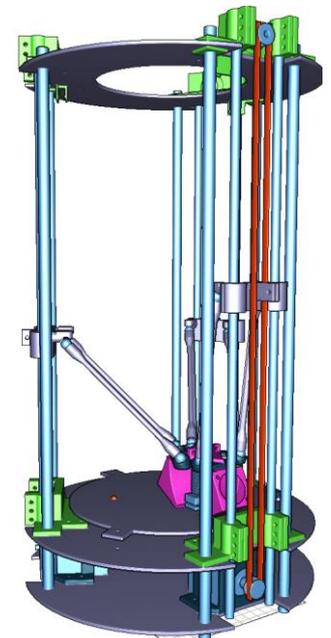


A walking robot, modeled and printed with our software IceSL

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sphA = implicit(v(-30,-30,-30), v(30,30,30), [{"float minDistanceSphereTracing=0.001;float perturb(vec3 p){return 5.0*abs(noise(p/7.0+2.0));}float distanceEstimator(vec3 p){return 0.3*(max(sphere(p,26),-sphere(p,23)) + perturb(p));}"]])
```



A procedural sphere, modeled and 3D printed from our software IceSL



3D printer modeled and fabricated from IceSL

The work place:

Inria is a French public research institution focusing on Computer Science. It has eight research centers across France. Inria employs over 2700 researchers and engineers from the best universities worldwide, among which more than 400 R&D engineers. Their mission is to work together with our research teams to develop novel software for research and to help transferring technologies towards industrial partners. Inria spawned 120 new startups based on technologies developed within the research teams.

Our team (<http://alice.loria.fr>) is based within the Inria Nancy Grand-Est center. We focus on geometry modeling and processing for computer graphics and additive manufacturing. The team contributed several major advances for instance for UV texture mapping (the LSCM algorithm is implemented in Blender and Maya), for real time texture synthesis (with methods

used by Disney Animation Studio and Pixar Renderman) and recently several technologies for additive manufacturing [1,2,3] (see also <http://webloria.loria.fr/~slefebvr>).

Since 2012 we develop novel software that considers the entire modeling and processing chain: from the description of the part to be manufactured to the real time visualization and the slicing of the object before 3D printing. The result is our IceSL software, available online on <http://shapeforge.loria.fr>

Additive manufacturing is an economic sector with a very strong growth, and we are working at the technological edge of the software powering the core technology. The proposed contract focuses on the industrial applications of our software. The recruited engineer will help shape one of the next generation software for modeling and 3D printing.

[1] https://www.youtube.com/watch?v=_drZksLRx94

[2] <http://www.loria.fr/~jdumas/publications/sfsyn/>

[3] https://sites.google.com/site/jonasmartinezbayona/structure_appearance

Objectives :

The recruited engineer will be in charge of the development of our software IceSL for industrial applications. On the software side, the objective is to work with our team to optimize the core engine of the software powering both rendering and slicing. This engine relies extensively on OpenGL 4 and exploits advanced data-structures to enable real-time boolean operations between volumes and rendering of complex objects. On the industrial side, the recruited engineer will collaborate with our industrial partners to model and fabricate concept parts demonstrating unique aspects of our software.

Expected qualities:

- Willingness to learn new skills and to work at the technological edge.
- Being creative, willingness to propose new approaches, to prototype novel ideas.
- Ability to work within a small, focused team on high-tech software.
- Ability to manage a project with different aspects (software, industrial partners, etc.)

Technical skills:

- C++, expert
- OpenGL/GLSL, expert
- Rendering algorithms, strong knowledge
- 3D modeling, basic knowledge
- C#, basic knowledge
- Using a 3D printer, some experience appreciated
- Excellent written and spoken English.

Prior experience

Not mandatory if the candidate can show strong skills and motivation (having worked on student or hobby projects on the topic of Computer Graphics or 3D printing is appreciated).

A work experience in the video game industry (engine/FX) is greatly appreciated.

A work experience in the CAD modeling industry is also greatly appreciated.

Academic background :

Master / engineer / PhD in Computer Science.

What to send:

Send

- Motivation letter,
- CV,
- recommendation letter,
- links to any prior work (including hobby projects) related to the topic.

To

sylvain.lefebvre@inria.fr

Generic applications will be ignored.