The Inria research group GRAPHDECO (http://team.inria.fr/graphdeco) is a partner of the EU H2020 project "EMOTIVE" (http://cordis.europa.eu/project/rcn/205688_en.html). The EMOTIVE project will be developing virtual cultural experiences through personalized storytelling and innovative technological solutions. In the context of this EU project GRAPHDECO will integrate its past Image-based rendering (IBR) solutions (see references below) into the tools developed in EMOTIVE, and will also integrate novel research solutions developed during the project. The engineer will work closely with a Ph.D. student working on the project as well as the principal investigator.

Image-Based rendering is an alternative approach to traditional 3D graphics which uses photographs of a scene instead of a geometric model, materials and lighting simulation. Our approach uses automatic multi-view stereo reconstruction of the scene with computer vision techniques, and builds on the very approximate geometry to develop high-quality free viewpoint rendering of the scene by carefully reprojecting input images onto the current viewpoint. The benefits of the approach for personalized storytelling and cultural heritage are to make the use and creation of 3D assets much easier and much more accessible to the virtual museum community.

The engineer will be in charge of writing robust and optimized versions of research prototypes, both within the group's research code-based and within the Unity3D implementation of the image-based rendering pipeline, as well as developing new solutions. The engineer will also provide several tools to the other partners of the European project within the Unity3D IBR platform.

The work will involve programming in C++ and C# (for the Unity3D component) and writing shaders in GLSL and the Unity shading language; maintaining the groups IBR codebase (currently based on git, cmake and C++ for windows and linux) and the Unity3D codebase (with target platforms in windows and android) and providing documentation both internally and for the partners of the project.

The engineer will also have responsibility for communicating with the project coordinator and writing the required deliverable reports in coordination with the principal investigator.

References:
Ortiz-Cayon et al. 2016; Automatic 3D Car Model Alignment for Mixed Image-Based Rendering. http://www-sop.inria.fr/reves/Basilic/2016/ODMAD16/

Thonat et al. 2016; http:// Multi-View Inpainting for Image-Based Scene Editing and Rendering http://www-sop.inria.fr/reves/Basilic/2016/TSPD16/

Ortiz-Cayon et al. 2015; A Bayesian Approach for Selective Image-Based Rendering using Superpixels;

http://www-sop.inria.fr/reves/Basilic/2015/ODD15/

Chaurasia et al. 2013; Depth Synthesis and Local Warps for Plausible
Image-based Navigation; http://www-sop.inria.fr/reves/Basilic/2013/CDSD13/

Skills and profile

The ideal candidate will have:
*   A Masters or engineering degree in Computer Science with a
specialization in Computer Graphics
*   Extensive experience in building complex graphics systems in C++
and experience in C#
*   Extensive experience in Unity3D, preferably both scripting and
plugin creation
*   Extensive knowledge of the theory and practice of the graphics
pipeline (including GPU rendering).
*   Some knowledge of computer vision (camera calibration, multi-view
stereo) is required.
*   Knowledge of cmake, git and OpenCV, and the ability to read,
comprehend and implement research papers is desirable.

Fluency in spoken and written English is a requirement.

Benefits

*   Restaurant on site
*   Partial contribution to the costs of public transportation
*   Possibility to use sport equipment within the campus
*   Possibility of paid French classes

Additional Information

Salary: based on experience.
Starting date: as soon as possible
Contract Duration: 18 months, renewable up to 32 months, available
immediately

Contact: George Drettakis: george.drettakis@inria.fr

Applications will be admitted until the position is filled.