Two Ph.D. positions in Computer Graphics within the EU ITN project “DISTRO”

Full time appointment for 36 months
Start date February to March 2015

We are seeking highly motivated and creative students to work on the EU-funded project “Distributed 3D Object Design” (DISTRO). Candidates should hold a Master's degree in Computer Science, Mathematics, or Physics and have a solid background in computer graphics. Excellent programming skills in C++ and fluent communication skills in English are essential.

About CUNI. The School of Computer Science of Charles University in Prague is a leading Computer Science research institution in the Czech Republic: it has consistently been awarded the highest research rating in national science rankings, and its Computer Graphics Group is among the world leaders in the areas of light transport simulation and physically-based rendering.

About the Project. DISTRO is an Innovative Training Network (ITN) focused on the distributed capture, editing, and fabrication of objects from the real world to digital and back again. The project goal is to enable users to casually capture objects, which can then be easily shared on the Web, customised in simple ways, and physically replicated elsewhere. The research topics tackled within the project include geometry and material capture, collaborative editing, rendering and physical fabrication.

This exciting collaborative project is coordinated by University College London (UK), and the academic partners include some of the most renowned research institutions in Europe: ETH Zurich (CH), DFKI (DE), MPI Informatik (DE), Saarland University (DE), IST Austria (AT), Napier University (UK) as well as Charles University in Prague (CZ).

There are also numerous industry partners involved in the project: Studio Gobo Ltd (UK), NVIDIA Research (US/FI), Disney Research (US/CH/UK), The Foundry (UK), Allegorithmic (FR), and Evolute (AT).

Each of the project partners contributes world-class competence in a particular area, and the core research contribution of Charles University is in the area of Computer Graphics. In particular, our two Ph.D. positions will focus on realistic rendering techniques and representations of material appearance.

Description of the Offered Positions. Charles University offers fully paid Ph.D. positions for two students, 36 month each (paid by the EU), with the possibility to later extend the time in Prague by one more year (paid by national funding). Apart from the research work itself, the students’ participation in the project will involve tight collaboration with project partners and frequent visits to the involved labs, active participation at the annual network events, as well as training in complementary skills such as research management. The two students will be part of the Computer Graphics Group of Charles University, see http://cgg.mff.cuni.cz/.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 642841.
**Position 1: Realistic Rendering.** The objective of this student’s work is to develop rendering solutions with the ability to reliably predict the visual appearance of objects before their physical fabrication. For this purpose, two rendering solutions will be developed: First, a real-time, though possibly approximate, rendering solution for objects with appearance described by the common material representation developer within DISTRO. Second, a high-quality progressive rendering solution based on accurate light transport simulation.

**Planned secondments:** IST Austria (2 months); MPI (1.8 months); NVIDIA (4 months); The Foundry (4 months)

**Position 2: Material Representation.** The goal of the second Ph.D. student is to develop a scalable, expressive material model that can be consistently used across different rendering technologies, and that yields results that are as close as possible for each of them. The student will also develop techniques to convert captured material data obtained within the project to this model, and to convert data from the model to material specifications that are compatible with the output devices used by the project partners.

**Planned secondments:** DFKI (2 months); IST Austria (2 months); UCL (1.8 months); Allegorithmic (5 months)

**Eligibility for Hiring.** In addition to meeting the formal Ph.D. study enrolment criteria at Charles University (possession of a Master’s degree in a relevant area of study), candidates must also fulfill two requirements imposed by the EU for ITN networks. The first is that they must not have worked or resided in the Czech Republic for more than 12 months during the three years prior to them joining the project. The second is that their Master’s degree must have been awarded in the past 4 years (in other words, anytime since March 2011).

**Work Environment.** The working language within the Computer Graphics Group at Charles University, and of course also within the DISTRO project, is English. In addition to this, Ph.D. studies at our university are conducted entirely in English. And it is not necessary to speak Czech in order to live in Prague, either: there are sizeable English- and German-speaking expat communities in the city, and English is widely understood.

**Salary.** Pay is according to standardised EU rules for ITN grants, which at current exchange rates leads to a net salary of about 54000 CZK (approx. 2000 EUR) monthly. This is more than double the national average salary in the Czech Republic, and allows for a comfortable lifestyle in Prague: see [http://lp.expats.cz/prague-relocation/](http://lp.expats.cz/prague-relocation/) for some local price references. For applicants with a family, there is an additional yearly net allowance of 3000 EUR.

**Application.** Inquiries should be directed to Jaroslav Křivánek (jaroslav.krivanek@mff.cuni.cz) and/or Alexander Wilkie (alexander.wilkie@mff.cuni.cz). Applications have to be submitted to our local administrative project officer, Eva Šauerová (sauerova@iuuk.mff.cuni.cz) via e-mail until February 28th with the acronym DISTRO in the subject line. The following information has to be attached in a separate PDF file:

1. a CV with a list of publications and/or projects,
2. evidence, such as a scan of the diploma, of having obtained a degree that qualifies the applicant for Ph.D. enrolment,
3. an official transcript of grades obtained during the applicant’s bachelor and master studies,
4. a personal statement (up to 2 pages) about the applicants’ experience, interests and career goals,
5. and names and contact information of three people who could write a letter of recommendation.

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Other Open Positions within the DISTRO Project. As described above, DISTRO is a multi-partner research and training network, and vacancies roughly similar to the two we are seeking to fill in Prague are currently also available at several of the other project partner institutions. This means that depending on their qualifications and career goals, applicants to the jobs at CUNI might be interested in simultaneously applying for some of the other positions in the ITN as well. However, due to European data protection laws, applicants would have to explicitly state in their application that they give permission for their application materials to be shared amongst the ITN partners: as is, we cannot automatically share applications with the other ITN partners without explicit consent of the applicant.

A safer and easier alternative for applicants interested in applying for multiple jobs within DISTRO is to use the central recruitment pages on the project consortium webpages, which have recently gone online. There, descriptions of all jobs that are currently open within the consortium can be found, along with instructions on how to apply for them.

Please note, though: the research focus of the individual positions within the ITN differs considerably. Which is why we encourage applicants to make an informed choice about which of these positions they actually apply to, as most of them require fairly specific prior knowledge that does not completely overlap between job openings: applicants that are perfectly qualified for one particular position might be rather poor matches for others. Because of this, generic applications to all the free positions in the ITN would not be meaningful, and should be avoided!

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