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Early Stage Research Position

in Computer Science (Visual Computing)

Job Summary

Open position for a researcher in the area of real-time 3D graphics and interactive scientific visualization of massive models in the Visual Computing Group at the CRS4 Research Center (Pula, Italy). This position is for an Early Stage Researcher (ESR) in an EU-FP7 Marie Curie Actions Initial Training Network called **DIVA: Data Intensive Visualization and Analysis**.

Description

The DIVA project is an international EU-FP7 Marie Curie Initial Training Network (ITN) with a focus on structured and collaborative research and teaching activities in Data Intensive Visualization and Analysis methodologies in data-driven science and technology application domains. DIVA involves three academic institutions (University of Zürich, University of Rostock, and Chalmers Technical University), one research lab (CRS4) and two industrial partners (Diginext and Holografika). Associated partners include large companies (nVidia, AMD, Airbus, Blom), research centers (Fraunhofer, CEREN), and hi tech PMIs (Gexcel, Eyescale).

Project

This open position is for an **Early Stage Researcher position** in DIVA, specifically in computer science with a focus on interactive 3D computer graphics and scientific visualization. With the continuing advances in data acquisition and simulation techniques, increasingly large 3D data sets have to be processed and interactively displayed for real-time visual exploration. The emphasis of the open position in this context is on the efficient scalable out-of-core and parallel visual data processing of very large spatial and volumetric data sets. Currently targeted application domains include the aerospace industry, advanced display systems, bio-medical imaging, geo-visualization, urban planning, architectural modeling, material science, molecular visualization and more.

On the part of the applicant, this requires interest not only in graphics related algorithms and data structures but also in the task and data complexity of the targeted application, and collaboration with domain scientists and other institutions. Furthermore, a strong interest and good skills in learning new programming frameworks, 3rd-party code and applied mathematics is necessary, as the targeted research project also builds on other and previously developed techniques.

The activities will not only include research and continuing education for network participants, but also support in teaching (esp. to other network participants), as well as system/software maintenance and administrative tasks. The main goal is to conduct excellent research, generating results which are published and presented in top international journals and conferences, while being practically applicable for solving challenging large scale visualization problems. If separately agreed with a University, the work could include achieving a PhD degree through the writing and defense of a doctoral dissertation.

Company

This advertised position is in the Visual Computing Group at the Center for Research, Development, and Advanced Studies in Sardinia (CRS4). CRS4 is an interdisciplinary research center promoting the study, development and application of innovative solutions to challenging problems in a number of thematic areas, including Energy, Environment, Biosciences, and Information Society. CRS4 key strength is the combination of leading edge facilities, which include one of the major HPC centers and

DIVA: Data Intensive Visualization and Analysis

the leading bioprocessing platform in Italy, with a strong research and development program in enabling technologies for data intensive applications. The **Visual Computing** group (ViC), directed by Enrico Gobetti, is dedicated to developing powerful interactive 3D tools for scientific visualization and visual simulation. The group's expertise is in multi-resolution data representation, time-critical graphics, external memory algorithms, and applications of virtual reality technology to visual simulation. Current projects range from desktop 3D tools to immersive virtual environments with combined visual and haptic feedback. More specifically, important examples of current research interests include the development of time-critical scalable local and distributed solutions for visual exploration of massive 3D models and the development of advanced interactive systems based on novel 3D "light field" displays.

Workplace

CRS4 is located in the Sardinia Scientific and Technological Park, reachable in 50 minutes by public transportation from downtown Cagliari. More than 500 researchers work in the park. The nearest university is the University of Cagliari, which has more than 30'000 students at undergraduate and graduate level.

The city of Cagliari, located in the South of the island, is the capital of Sardinia and has a population of about 400,000 in its metropolitan area. Its modern international airport, serving more than 3 million passengers/year, is conveniently located at only 15 minutes from downtown. The main Italian hubs of Rome and Milan are a one-hour flight from Cagliari. The mild climate of the region and the vicinity of beaches with white sands and crystal clear sea are a huge bonus for off-work hours.

The DIVA project involves frequent interactions, internships, workshops and summer schools with the other international network partners. Hence the workplace incorporates short stays at other research labs and companies in other European countries and cities (i.e. Switzerland, Italy, Germany, Sweden, France and Hungary).

Benefits

ESR fellows are remunerated according to EU-FP7 regulations for Marie Curie ITNs as well as according to local host regulations. ESR and PhD appointments will be made with respect to local host university and company guidelines. Same applies for fringe benefits and vacation days.

Comment/web site for additional job details

For application and further information contact: Katia Brigaglia (Secretary, CRS4 Visual Computing Group), diva-jobs@crs4.it

Requirements

- A MSc degree (or equivalent) in computer science or closely related area from a research university is required.
- Applicants must meet the requirements of FP7 Marie Curie ITN Early-Stage Researcher (ESR). In particular:
 - Applicants must be at the post-graduate (or equivalent) level. Eligible candidates must have obtained the degree which formally entitles them to enroll on a doctorate.
 - Applicants must be, at the time of recruitment, in the first four years (full-time equivalent) of their research careers
 - Applicants must have not yet been awarded a doctoral degree
 - Applicants can be nationals of any country
 - Applicants must not have resided or carried out their main activity in Italy for more than 12 months in the 3 years immediately prior to their recruitment.

DIVA: Data Intensive Visualization and Analysis

- The prospective candidates are supposed to have an excellent background in computer science and systems as well as strong mathematical skills and practical experience with computer graphics. Exposure to parallel programming and distributed systems is also welcome. Strong interests in numerical methods and collaboration with domain scientists is of further importance as well. In depth C++/CUDA/OpenCL/OpenGL knowledge is also welcome.
- Applications must include a detailed CV/resume, information of university level educational background and practical work experience in computer science or a closely related field, a statement of motivation and clear exposition of prior graphics experience. Certified copies of transcripts and reference letters should be enclosed.
- Applicants are obliged to engage in the DIVA training and research activities.

Dates and More

- Entrance is subject to the successful evaluation of candidate(s), expected for January 2013.
- Duration is expected to be about 30 months

Contact

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