CHALMERS

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Two PhD student positions in Computer Science: HCI and Visualization

Respected Colleague

I am happy to announce two PhD student positions in Computer Science; both positions are in the area of Human-Computer Interaction (HCI) and Visualization.

The first PhD position is part of the DIVA project, which is an Initial Training Network (ITN) funded by the EU within the 7th Framework Program. The people in this program are mostly Early-Stage European scientific Researchers who in the future will lead the development of novel Data Intensive Visualization and Analysis (DIVA) methodologies in data-driven science and technology application domains. It brings together six full partner institutions and eight associated partners from six countries.

The second PhD position is part of an industrial research project between i) Sectra AB, ii) the Center for Medical Image Science and Visualization (CMIV) at Linköping University, and iii) the t2i Lab at Chalmers. The objective of the project is to raise the usability for visualization of complex medical data sets through methods based on continuous adaptation to the tasks and cognitive processes of the end user. The proposed adaptation approach is intended to reduce the cognitive overload while retaining all relevant information and all interaction possibilities.

Both positions require an M.Sc. with excellent background in computer science and HCI, as well as strong mathematical skills and a good knowledge of computer graphics. Please pass this on to any good and motivated candidate in your department, or post it on your department news board. Both positions are linked from the news-section of: http://www.t2i.se/

With kind regards

Morten Fjeld
PhD, Associate Professor

Attachment: Two PhD position announcements

PhD student position in Computer Science: HCI and Visualization

Chalmers University of Technology, Sweden, opens a position for a PhD student in the area of human-computer interaction (HCI), 3D user interfaces (3DUIs), and interactive scientific visualization. This position is for an Early Stage Researcher (ESR) in an EU-FP7 Marie Curie Actions Initial Training Network (ITN) called DIVA: Data Intensive Visualization and Analysis. The DIVA project focuses on structured and collaborative research and teaching activities in DIVA methodologies in data-driven science and technology application domains. DIVA involves three academic institutions (University of Zürich, University of Rostock, and Chalmers University of Technology), one research lab (CRS4), and two industrial partners (Diginext and Holografika).

The project: This position is for research in a computer science PhD program in DIVA, specifically with a focus on HCI, 3DUIs, scientific visualization, and computer graphics. With the continuing advances in simulation techniques and interactive visualization, increasingly large 3D data sets can be processed and interactively displayed for real-time visual exploration. In this context the emphasis of the position is on ensuring real-time performance in interactive 3D applications through adaptive and parallel methods adapted to current and future hybrid hardware platforms. 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. Besides technical aspects, we will also focus on innovation in perceptual- and cognitive-motivated methods, i.e., how to best harness human capability by efficiently integrating 3D visualization into complex information spaces, leading to fully functional digital mockups. Project web: http://diva-itn.ifi.uzh.ch/

The position: This position requires that the applicant has interest not only in HCI, 3DUIs, infovis, and computer graphics, but also in the task and data complexity of the targeted application. Readiness to collaborate with domain scientists and other institutions is key. 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 builds on other previously developed techniques. The activities of the position include not only research and continuing education for PhD students, but also support in teaching as well as in administrative tasks. The main goal is to conduct excellent research, generating results that are published and presented in top international journals and conferences, and to work towards eventually achieving a PhD degree through the writing and defense of a doctoral dissertation.

The division: The Division of Interaction Design is part of the Department of Applied Information Technology (http://www.chalmers.se/ait/EN/). The department has more than 80 faculty members and offers a number of degrees to students committed to scholarship in the wide area of applied information technology. We are located at Lindholmen Science Park, one of Sweden's most dynamic hi-tech areas, just 5 minutes from downtown Gothenburg. Since 2011 our offices, educational studios, and research labs are located in the architecturally cutting-edge building, Kuggen. This research project will be carried out at the Tabletop Interaction Lab (t2i Lab, http://www.t2i.se/). Finally, the DIVA project involves frequent interaction, 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 (i.e. Switzerland, Italy, Germany, France, and Hungary).

Benefits: Since the Training Network promotes mobility, applicants should not have lived, studied, or worked in Sweden the last 12 months. ESR fellows and PhD students are remunerated according to EU-FP7 regulations for Marie Curie ITNs, as well as local host regulations (pre-tax salary per month is 25.650 SEK). ESR and PhD appointments will be made in accordance with university guidelines. The same applies for benefits and vacation days. A maximum of 20% of your time will be devoted to other duties at the department, mainly teaching. The remaining time will be devoted to your own courses and research within the project, and you will be expected to obtain a PhD within a maximum of 5 years. Applicants will have to engage in the DIVA training and research activities and, if applicable, PhD students in an organized PhD training program at the host institution.

Qualifications: An MSc degree in computer science, computer engineering, or a closely related area from a research university is required to enter the PhD program. Prospective candidates should have an excellent background in computer science and HCI, as well as strong mathematical skills and a good knowledge of computer graphics. Exposure to user interface design and development is also preferred. As for all PhD studies, a genuine interest and curiosity in the subject matter and excellent analytical and communication skills, both verbal and written, are needed. Furthermore, since the research normally involves developing and testing analytical techniques, good programming skills are important.

Application procedure *The application should be marked with Ref 20120085 and written in English. The application should be sent electronically and be attached as **three** pdf-files, as below:*
1. Application: CV including a photo, certified copies of education certificates, including grade reports and other documents, English language test, e.g. TOEFL score, and letters of recommendation from academic institutions and/or previous employers (optional). Certified copies of transcripts are required.
2. A letter of application detailing your specific qualifications for the position - information about your practical work experience in computer science or a closely related field, a statement of motivation, and a clear exposition of prior HCI and graphics experience.
3. Publications: - relevant work such as bachelor's or master's thesis (or outline of a thesis under preparation).
The files may be compressed (zipped).
URL for submission:
http://web1.reachmee.com/i003/chalmers/se/vacdetail.aspx?commadseqno=474&postback%20=%20vacancies.aspx

Application deadline: 2012-04-30 (or until a candidate has been hired)

For questions, please contact   Morten Fjeld, e-mail: **fjeld@chalmers.se**

Chalmers Ph.D.-education: Jan Jonsson
Chalmers division level: Jonas Landgren

Industrial PhD student position in Computer Science: HCI and Visualization

Job Summary and Description

In collaboration with Sectra AB and Linköping University, Chalmers University of Technology, Sweden, opens a position for a PhD student in the area of Human-Computer Interaction (HCI), 3D user interfaces (3DUIs), and interactive scientific visualization. The project focus will be on interaction with and analysis of large 3D medical data sets. The position is a joint research project between i) Sectra AB, ii) the Center for Medical Image Science and Visualization (CMIV) at Linköping University, and iii) the t2i Lab at Chalmers University of Technology. The PhD student will benefit from academic and industrial research training. The primary location for the position is Linköping but the student will also spend many substantial periods in Gothenburg. International exchange and shorter stays in central Europe, Asia, or North America can be expected.

Project

The objective of this project is to significantly raise the usability for visualization of complex medical data sets through continuous adaptation to the detailed task and cognitive processes of the end user. The proposed adaptation approach is intended to reduce the cognitive overload while retaining all relevant information and all interaction possibilities. This aim aligns with the overall vision for a visualization system to be a seamless extension of the human cognitive process. The project's application area is Direct Volume Rendering (DVR) of multivariate data (having several values per data point). The area is chosen partly because of the important emerging acquisition techniques producing such data, partly because of the challenging research problems related to usage complexity. The proposed project has a cross-disciplinary character, including medical, visualization, and human-computer interaction aspects. In the greater perspective, the project does not only aim to contribute to improved visualization solutions, but also to spur improvement of the cognitive strategies employed to solve clinical tasks.

On the part of the applicant, this requires interest not only in HCI, 3DUIs, scientific visualization, and computer graphics, but also in the task and data complexity of the targeted application. Readiness to collaborate with domain scientists and other institutions is key. 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 builds on other previously developed techniques. The main goal of the position is to conduct excellent research, generating results that can be published and presented in top international journals and conferences. At the same time, the candidate will work towards achieving a PhD degree through the writing and defense of a doctoral dissertation.

Apart from research deliverables the project also includes working with proof-of-concept implementations of the developed methods in close cooperation with Sectra product development, to prepare for fast and successful commercialization.

Work Environments: Industry and Academia

The position is formally divided into two positions of 50%, one at Sectra and one at Chalmers. The research environment also includes CMIV. The primary location for the position is Linköping (Sectra and CMIV), but substantial work periods in Gothenburg will be frequent.

At Sectra AB (www.sectra.com/medical), the PhD student will be part of the Radiology IT business line, working within the Development department. Sectra is one of the world's leading manufacturers of IT systems for medical imaging with well over 1,000 hospitals around the world as customers. From the headquarters in Linköping, Sweden, Sectra runs a global operation of about 500 employees and a turnover of about 900 MSEK. The PhD student will be working in the Sectra offices at Mjärdevi Science Park, close by the main Linköping University Campus.

At CMIV at Linköping University (www.cmiv.liu.se), the PhD student will be working in a highly esteemed cross-disciplinary environment where medical and technical scientists collaborate to solve the extreme challenges in medical imaging. CMIV is located within Linköping University Hospital. About 75 senior

scientists and 40 doctoral students are affiliated with CMIV. The infrastructure at CMIV includes a solid set of imaging and visualization equipment, including state-of-the-art Computed Tomography and Magnetic Resonance scanners.

At Chalmers, the PhD student will work at the t2i Lab (http://www.t2i.se/), which is part of the Dept. of Applied IT. Tangible User Interfaces (TUIs) allow users to interact with computers through familiar tangible objects, thereby taking advantage of the richness of the tactile world combined with the power of computer-based simulations. TUIs give physical form to digital information, employing physical artifacts both as representations and controls for computational media. Interactive multi touch tables (or: tabletops) can be of use in a range of areas such as the product planning, analysis of medical data, and scientific visualization. At the t2i Lab, the focus will be on how to employ TUIs, tabletops, and combinations of these for interaction with and analysis of large 3D medical data sets. The PhD candidate will be enrolled into the Chalmers doctoral program. We are located at Lindholmen Science Park, one of Sweden's most dynamic hi-tech areas, just 5 minutes from downtown Gothenburg.

For the Chalmers 50% position, pre-tax monthly remuneration will start at 12.825 SEK (corresponding to a 25.650 SEK full-time salary). For the 50% Sectra position, salary will be individually negotiated. The candidate is expected to finance the extra cost of mobility (working partly in Linköping, partly in Gothenburg). In the case of significant proven cost related to the expected mobility, a higher salary may be negotiated.

Requirements
A MSc degree in computer science, computer engineering, or a closely related area from a research university is required to enter the PhD program. Prospective candidates should have an excellent background in computer science and human-computer interaction, as well as strong mathematical skills and a good knowledge of computer graphics. Exposure to user interface design and development is also preferred. Furthermore, good programming skills are important, since the Sectra position includes producing software with high demands on performance and robustness, and since the research will involve developing and testing analytical techniques. Experience from medical imaging and a health care operation is a strong positive factor. As for all PhD studies, a genuine interest and curiosity in the subject matter and excellent analytical and communication skills, both verbal and written, are needed.

Application procedureThe application should be marked with Ref 20120084 and written in English. The application should be sent electronically and be attached as three pdf-files, as below:

1. Application: CV including a photo, certified copies of education certificates, including grade reports and other documents, English language test, e.g. TOEFL score, and letters of recommendation from academic institutions and/or previous employers (optional). Certified copies of transcripts are required.
2. A letter of application detailing your specific qualifications for the position- information about your practical work experience in computer science or a closely related field, a statement of motivation, and a clear exposition of prior HCI and graphics experience.
3. Publications: relevant work such as bachelor's or master's thesis (or outline of a thesis under preparation).

The files may be compressed (zipped). URL for submission:
http://web1.reachmee.com/i003/chalmers/se/vacdetail.aspx?commadsegno=472&postback%20=%20vacancies.aspx

Application deadline: 15th of April 2012 (or: until a candidate has been hired).

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