

20. Bilateral Student Workshop CTU Prague - HTW Dresden

Information for speakers

- timeslot for presentation 15 minutes + 5 minutes for questions
- Laptop and Beamer will be available
- Deadline short abstract: 17.11.16 (not more than 6 lines text)
- Extended Abstract: This is the first year we want to publish Extended Abstracts (1-2 pages) as a Technical Report after the workshop. Deadline is 14.12.16. For writing your Extended Abstract please use LYNC-Style (<http://www.e-publications.org/springer/support/aps.html>).

Programm (preliminary)

Friday, Nov 25

Breakfast

09:00-10:00 Breakfast at HTW Cafeteria

Part I - HTW Dresden, Library Room B302

10:00-10:20 Vojtěch Novák (CTU Prague)

Multiplatform mobile app development with React Native

React Native is an open source library for creating native mobile apps using Javascript and React. It allows the developer to create user interfaces using React components which are then mapped onto their native counterparts. The topic of this talk is development of an app for ios and Android with this library. We will cover different topics such as the developer experience, communication with native layer and libraries for state management, as well as achieving platform-specific look and feel. We will conclude with some of the advantages and disadvantages of using React Native.

10:20-10:40 Anna Kutikova (CTU Prague)

CoBoard Flowers: An Interactive Installation for Prague Spring International Music Festival

In this paper we introduce CoBoard Flowers, an audio-visual public installation for Prague Spring International Music Festival. An interactive visualization with floral motifs is shown and is controlled by a face detection technology, enabled by a computer vision algorithm. The visualization is controlled by the estimated position, distance, gender, and age of the participants. The visualization is accompanied by adaptive music. The solution has been qualitatively evaluated (N=6). The installation has been used in the total of 453 interactive sessions during 14 concert evenings.

10:40-11:00 Michaela Riganova (CTU Prague)

Crowdsourcing as the possible solution to inaccurate navigation systems for handicapped people

To create reliable navigation system is a complex task. But creating one for handicapped people brings another set of challenges. The spatial knowledge about the given environment is the basis for successful navigation to remote destination. While this is necessary for non-handicapped people too, the handicapped ones have much higher requirements regarding information about accessibility. Detailed knowledge about the presence of existing landmarks, obstacles and properties of pavement segments are needed. But how to collect these data efficiently? How to make sure that all the data will be properly described? One of the proposal is to achieve this data mining by crowdsourcing approach. This presentation will discuss possible solutions and challenges which are related to this problem.

11:00-11:20 Jana Szczurkova (CTU Prague)

Supporting the work of operators of tele-assistance centers for visually impaired people

The work of the operator of a tele-assistance center for visually impaired people includes searching information on the internet or public transport connections and preparation of textual itineraries of planned routes. Usually the operator opens several browser windows with different services and map providers at the same time to quickly find desired information. This task demands high cognitive load and increases a stress level. Our goal is to ease these stressful situations by means of aggregating several information sources in one access point and optimising, operator's workflow. We aim to achieve this goal by introducing a sophisticated set of visualisation tools laid over a map, and several techniques which utilize previously created descriptions of routes and provide partial automatic generation of the new routes.

11:20-11:40 Vojtěch Gintner (CTU Prague)

Accessibility of mobile rich internet applications for visually impaired users

Navigation of blind and visually-impaired people using a mobile device is a challenging task. In our work, we focus on providing an accessible mobile user interface for existing navigation system. We discuss matters of rich internet application accessibility same as the availability of necessary APIs. In our design, we focus on sidewalk level localization accuracy using conversation with the user as well as on crowd-sourcing additional information about their whereabouts. During all design and prototyping phases, we employ of User-Centered Design methodology.

Lunch

11:40-13:10 Lunch

Part II - HTW Dresden, Library Room B302

13:10-13:30 Thomas Neumann (HTW Dresden - TISRA)

Multi-modal Measurement of Muscle Deformations

Imagine standing on one of your legs. Immediately, a complex biological control system is activated in order to slightly contract specific muscles in a sophisticated arrangement, all in order to prevent you from falling over. We aim to reconstruct muscle deformations from skin surface deformations, using optical 3D scanning methods that allow precise 3D reconstruction of skin and muscles in motion. The talk will present novel measurement setups, calibration routines and reconstruction algorithms developed in the TISRA junior researchers group in order to achieve this goal. Our preliminary results promise precise insights into the temporal and spatial strategies for muscle control during balance tests and may lead to improved assessment and therapy planning.

13:30-13:50 Loreen Pogrzeba (HTW Dresden - TISRA)

Motor function as biomarker: Motion analysis for therapeutic intervention

Medical rating scales are very common in medical assessment, but often provide a coarse and observer-dependent classification of symptoms.

Especially for the assessment of neurological diseases motion analysis can be an indicator to objectively trace motor function and quantify the success of a therapeutic intervention. The talk illustrates requirements and challenges of practically applied motion analysis using the example of Swedish function oriented music therapy.

13:50-14:10 Stefanie Gassel (HTW Dresden - TISRA)

Biomechanical body surface modeling - Muscle Analysis with OpenSIM

The preliminary work in the field of statistical body shape modeling ignores the biomechanical nature of the cause of surface deformations. Our research aims at combining the previously separate paradigms - data driven and simulation driven 3D surface modeling - into a hybrid body shape model. This talk will demonstrate the application of the open-source tool OpenSim - from model scaling via the simulation workflow to the challenges and validation process - in order to include simulated muscle forces and other biomechanical data within the mathematical model and thus explain and control muscular deformation effects in the skin surface.

14:10-14:30 Mathias Klingner (HTW Dresden - TISRA)

SOME thoughts - Pose Estimation with Self-Organizing Maps

A suitable human robot interface is of great importance for the practical usability of mobile assistance and service systems whenever such systems have to directly interact with persons. These interaction is commonly based on the learning and interpretation of the gestures and/or the facial expressions of the dialog partner in order to avoid collision and to infer their intention. Therefore, it is necessary to track the motion of the human body or rather the movements of individual parts. This presentation will give a short overview of the approach we use as well as the related challenges and his benefits.

14:30-14:50 Falko Lischke (HTW Dresden - TISRA)

RoNiSCo: Robotic Night Shift Companion

This publication presents a comprehensive solution for an autonomous mobile robot platform that help caretakers in a stationary retirement home during the night shift. Consolidating algorithms and approaches from almost all research fields of robotics made it possible to create a complex system able to navigate freely in a learned environment, to recognize incidents like elderly getting lost and to contact a caretaker via a smartphone or computer application if that incident has to be reported.

Coffee Break

14:50-15:20 Coffee Break

Part III - HTW Dresden, Library Room B302

15:20-16:20 Organiser Meeting

Dinner

18:00 Dinner at Dschingis Khan

Wiener Platz 9, 01069 Dresden

www.dschingiskhan-dresden.de

Saturday, Nov 26

Part IV - HTW Dresden, Library Room B302

10:00-10:20 Jan Balata (CTU Prague)

Explorations into use-cases of conversation systems in campus environment

Conversation systems gain a lot of attention nowadays. They provide a natural language interfaces for various services commonly in a form of a text-messaging user interface. Many of these services are rather simple information retrieval services such as weather forecast or news. In our talk, we explore several use-cases placed into campus environment – navigation, problem solving, and accessibility for visually impaired students. Our prototype applications were developed in cooperation with IBM Research in Prague and introduce state-of-art IBM Watson Conversation technology.

10:20-10:40 Martin Dzurenko (CTU Prague)

StyLit: Illumination-Guided Example-Based Stylization of 3D Renderings

We present an approach to example-based stylization of 3D renderings that better preserves the rich expressiveness of hand-created artwork. Unlike previous techniques, which are mainly guided by colors and normals, our approach is based on light propagation in the scene. This novel type of guidance can distinguish among context-dependent illumination effects, for which artists typically use different stylization techniques, and delivers a look closer to realistic artwork. In addition, we demonstrate that the current state of the art in guided texture synthesis produces artifacts that can significantly decrease the fidelity of the synthesized imagery, and propose an improved algorithm that alleviates them. Finally, we demonstrate our method's

effectiveness on a variety of scenes and styles, in applications like interactive shading study or autocompletion.

10:40-11:00 Frank Bahrmann (HTW Dresden)

VR_in_TSD

Everyone who tried one of the new Virtual Reality technologies for the first time is astonished. We want to utilize this new medium to gather information about a wide range of aspects in the field of human robot interaction, e.g. interest estimation, acoustic and semantic speech processing, or robot navigation behavior. The first area this approach is applied to, will be the museum environment of the Technische Sammlungen Dresden. Conducting experiments within the real environment is not only time consuming in preparation but also greatly limits the amount of test subjects and the kind of tests. With the use of VR experiments could be executed without a costly preparation in direct vicinity of our working place. Resulting from that, the iteration cycle time is drastically reduced leading to a faster more user oriented development.

11:00-12:00 "Panel Discussion"