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Decomposing Time-lapse Paintings into Layers

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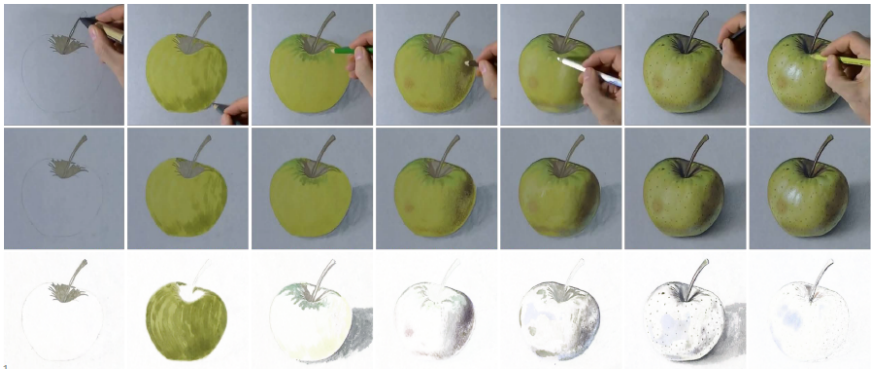

Fig. 1. While drawing an apple the temporal information is used to create different layers in the resulting image.

When painting in the real-world, the temporal history of strokes is lost and powerful history-based image editing operations cannot be used. We present a set of techniques to process and decompose a time lapse video of a painting into a sequence of stroke images. We also present a tool for performing spatio-temporal selections of strokes and for editing them.

Adaptive Tracking and Out-of-plane Rotations

Peter Poschmann

Hochschule für Technik und Wirtschaft Dresden

Fig. 1. Tracking a person in a video sequence.

We have an autonomous robot (Fig. 1)that should interact with persons. To do so, it needs to "see" them. Our people tracking approach relies on the detection of faces or upper bodies. When the persons turn away from the robot, they cannot be detected anymore. By adding adaptive tracking, where the appearance of the persons is continuously learned, we can bridge the gaps between detections and thus enable the robot to "see" the persons in those cases where they turn away. But the tracking has to cope with out-of-plane rotations, which some approaches cannot handle very well or at all.

In hospital navigation for people with special needs

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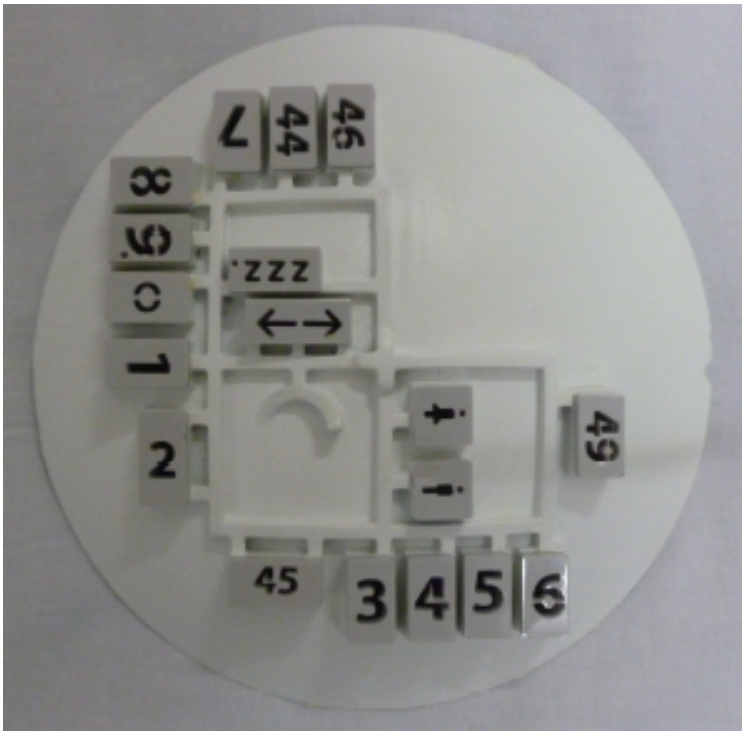

Fig. 1. Navigational display suited for blind patients in a hospital.

In the outdoor environment, global navigation satellite systems (like GPS) can be used to determine user's position. However, this is not possible in the case of indoor navigation. Various existing indoor navigation systems use complex methods for determining user's position. Hence, these methods usually require modifications to the environment and users must wear special devices or install specific one-purpose applications on their smartphones at least. This can cause practical issues, in front of all to specific target user groups. The primary target audience of our system

are seniors and visually impaired people. Our work focuses on a electronic navigation system for hospitals that does not require any device to be carried by users. Our presentation shows design and realization of the navigation system including specific features tailored for our target user audience.

CAMOUFLAGE – Uninterruptible and contact-less tracking at the workplace

Kim Voss, Loreen Pogrzeba, and Jens Friedrich

HTW Dresden

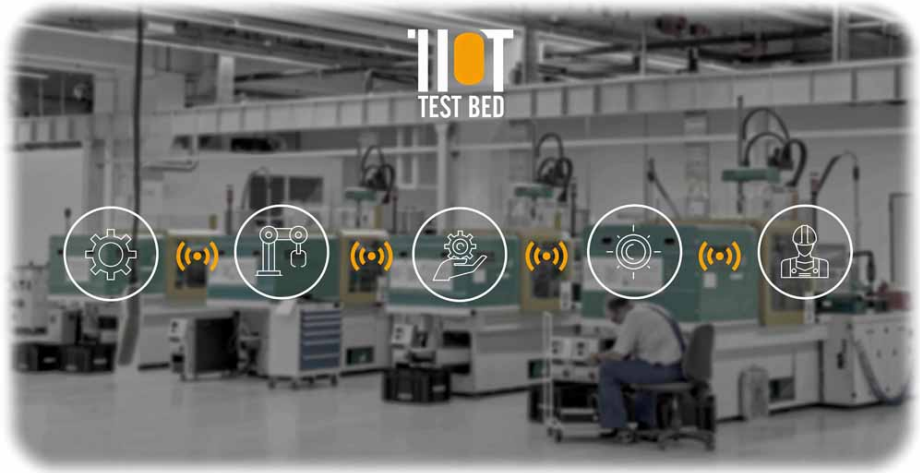

Fig. 1. The model factory serves a test bed for the industrial internet of things.

Industrie 4.0 addresses the 4th industrial revolution and deals with smart objects, smart machines and smart production. We aim to develop a fully interconnected production system, where workers, machines, construction components and the manufacturing execution system can process and share electronic information with each other. In the 2nd part of the presentation the audience can explore a prototypic and interactive workplace.

Breathing Friend: Stress relief by supporting correct breathing

Kateřina Pražáková

CTU Prague

Fig. 1. The *breathing friend* helps to relief stress by lowering the user's breathing frequency.

Stress is contemporary problem that affects most of us. In our presentation, we describe how combination of product design and technology could be employed for stress reduction. A physical interactive product that supports stress-relief breathing has been developed. We will focus on the the design evolution and on how the target user audience have been involved into the design process.

Simplifying the documentation of digital reconstruction processes

Jonas Bruschke

HTW Dresden

Fig. 1. Digital reconstruction of historical architectural drawings. A good documentation is needed to retrace from which origin the reconstruction has been developed.

Digital reconstructions are becoming more and more common in archaeology and architecture visualizing historical and constructional relationships of lost, but also present structures. However, such projects usually lack of a proper, traceable, and valuable documentation practice which is rigorously applied. We propose a documentation tool for 3d reconstructions supposed to accompany a project and to support frequent tasks in digital reconstruction processes.

Design of mobile navigation application UI for wheelchair users

Václav Legát

CTU Prague

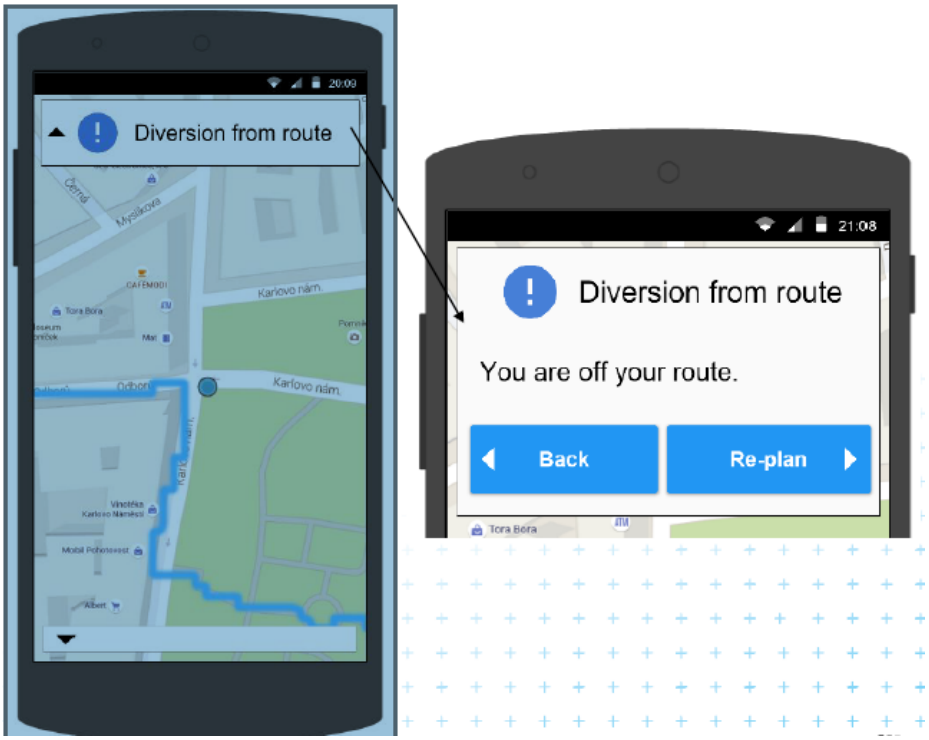

Fig. 1. Smart phone app helping wheel chair users to navigate through city environment.

The presentation describes design of user interface of mobile navigation application for wheelchair users. The design aims to make the application multimodal and easy to use. The main identified problems of using the application by wheelchair users are described and possible solutions in user interface are presented.

Flight planning for low cost UAVs

Benjamin Gehmlich

HTW Dresden

Fig. 1. Work under severe conditions in Bukhara (Uzbekistan), at a temperature of more than 40°C, where the Phantom I kit was successfully applied.

The spread of UAVs in industrial and also private sectors is omnipresent, not least because the politic try's to regulate the ascension more and more. The reason for that is the increasing usage of multicopter based on the evolution from the technology. On the one hand, there are cheap system with consumer market hardware. On the other hand, there are heavy high-quality cameras which need an expensive and powerful UAV. This systems including a better sensor technology for example the GPS or GNSS. The flight plan based on waypoints which defined the software depending on parameters such as the overlapping of the images and the ground sample distance. Despite the automatic flight it must be possible to control the UAV at all the time by hand. This means that in both cases it is important that the pilot have a good apprenticeship. The project "Archaeocopter" cooperate with different partners for example with the german archaeological institute and the archaeological hertitage office in saxony on this fundamental point. In time we have a concept with training scenarios to improve the experience level. The prospection areas

were selected to find out the limits of technical and practically feasibility and not only by their historical relevance. Adapted from this different scenarios we could find three main classes and matching flight strategies for each of them.

Chess4Blind

Michal Řežábek and David Polák

CTU Prague

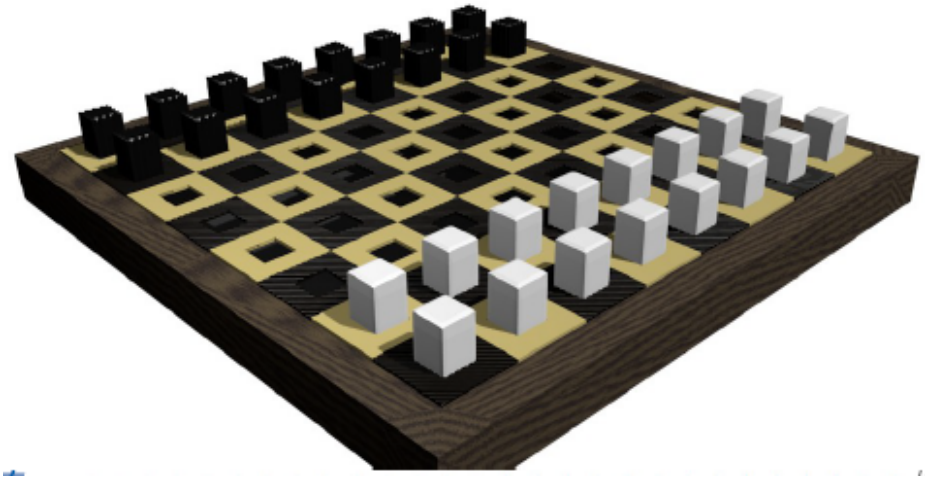

Fig. 1. Chess board that can easily be understood by blind as well as seeing players.

Our presentation focuses on how chess is currently played by visually impaired people. Description of Issues faced by visually impaired players is followed by proposal possible solutions to address some of these issues. In detail, we focus on the current state of chess for blind, types of chessboards used and issues the current chessboard design induces. Then we will introduce our new design of a chessboard for blind people that supports two modes. Firstly, almost flat apereance focused on fast tactile analysis of the game. Second, more traditional chessboard look, with protruding pieces, which can be easily manipulated. In the perception we will describe the design process, evolution of prototypes and user testing.

Robots as Tour Guides and for Elderly Care: Current State and Perspectives

Hans-Joachim Böhme and Sven Hellbach

HTW Dresden

Fig. 1. Our Robot in the elderly care facility plays Skat with the residents.

The Artificial Intelligence Department at HTW focuses on two application scenarios: the interactive tour-guide robot TESARO, which is to interact with visitors in the museum Technische Sammlungen Dresden, and a robot that is dedicated to interact with elder people in a nursing home and to support the caregivers during daily routine. Wheras the TESARO project has reached a presentable state and is, at least partially, continued within

the activities of the actual running Junior Research Group TISRA, the nursing home activities are just at the beginning and are to be intensified. Here, an interdisciplinary project is planned that involves experts from robotics and human-machine interaction as well as from neurology and geriatrics.

Robotiks meets Graphics

Thomas Neumann

HTW Dresden

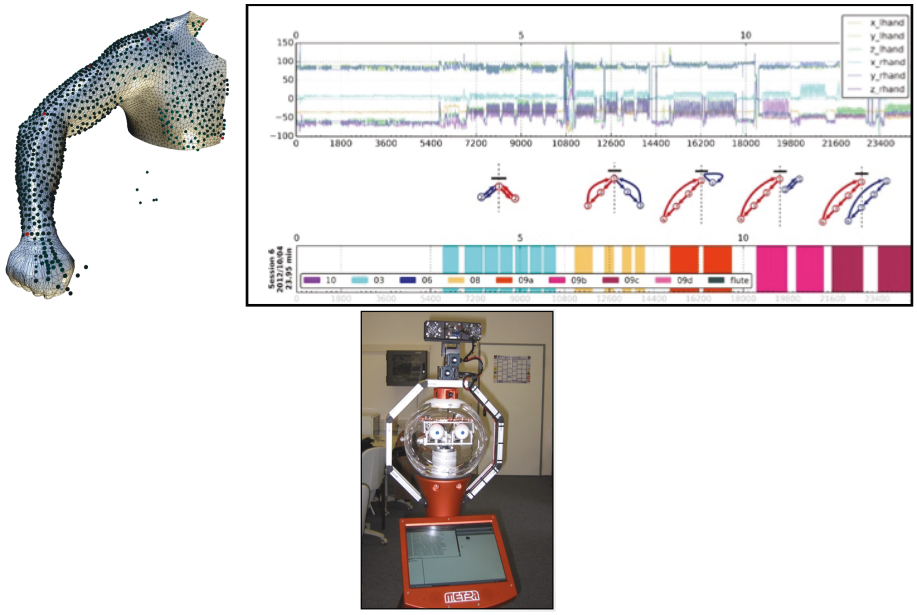

Fig. 1. Combining motion analysis on different levels of accuracy with the help of a robot companion.

The Junior Research Group TISRA at HTW Dresden Our new research project, TISRA, aims at pushing application-oriented research in cognitive robotics, 3D computer vision, human-computer-interaction and motion analysis. The project brings together young researchers from the previously independent robotics and computer graphics groups and bundles their competences. In this talk, I will outline the scope, the goals, and some early results of TISRA.

GraFooSha: Food sharing for senior users

Miroslav Macík

CTU Prague

Fig. 1. Easy to use interface to allow food sharing for seniors without the need for a computer.

In this presentation we introduce GraFooSha (GRAndma FOOd SHAring - a device that provides access to food sharing social network to senior users. GraFooSha is a physical device that incorporates deep-rooted concepts the target group is familiar with. A user study, conceptual design as well as industrial design we be shown. Presentation also briefely expains the technical realization of mechanical, electronic and software components.