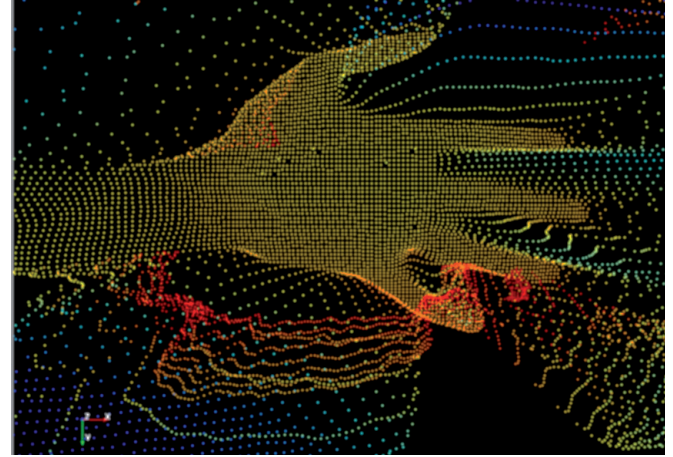


## 0.2 CONTACTLESS GESTURES

### INTELLIGENT GESTURE RECOGNITION AND INTERACTION CONCEPTS



Intensity image from the PMD ToF-sensor and a visualisation of the point cloud image acquired from the ToF-camera.

#### ABSTRACT

With the introduction of Apple's iPhone, gesture control became popular and was perceived as an intuitive means of interaction. Contactless gestures received broad attention with the X-Box Kinect.

Current technology is limited to a small number of uses, mainly in entertainment systems. The target of this project is to increase the range of possible applications, e.g. to the field of automotive, industrial applications (manufacturing plants), assisted living in contexts ranging from private households to hospitals (interaction for people with disabilities) and many more. Research is performed in three areas:

- Technology improvements: using the most recent time-of-flight cameras embedded in the field of multi-sensor-fusion.
- 3D Gesture recognition and machine learning algorithms.
- Development of interaction concepts for various areas of applications.



Hand pose database.

#### LIST OF PARTICIPANTS

- NISYS GmbH, Bochum

#### PROJECT START AND DURATION, TOTAL COSTS AND FUNDING

Project: December 2013 – August 2015

Funding: 171,255 Euro by the Federal Ministry for Economic Affairs and Energy (BMWi)

#### PERSPECTIVES, APPROACHES AND IDEAS FOR FURTHER DEVELOPMENT AT THE EU LEVEL

Algorithms and concepts for intelligent gesture recognition are currently being developed in a generic approach. To achieve higher usability, further research regarding new applications and targeted user groups will be required.

Current ideas include automotive applications, such as HMI (Human-Machine-Interaction) for higher automated driving and new mobility concepts, but also as part of an improved HMI concept in traditional cars with respect to distracted driving and increased safety, e.g. finger gestures with the hands on the steering wheel to control head-up displays while keeping the eyes fixed on the road ahead. Such interaction concepts can also be applied to support active assistance, e.g. replacing multiple remote controls with more intuitive gestures could help elderly and disabled people.



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