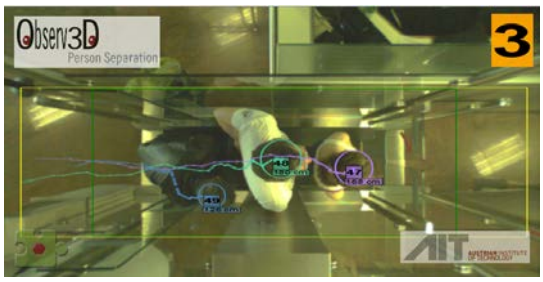
Protecting highly frequented infrastructure

Cutting edge AIT safety and security systems for the protection of people and infrastructure

Public transport facilities like airports and metro stations are equipped with numerous cameras to ensure passenger safety and security at these highly frequented places. Intelligent image processing technologies play a key role in this respect. AIT experts are working together with manufacturers of video components and security solutions, infrastructure operators, authorities and public institutions to develop state-of-the-art networked and camera-based safety and security systems for the protection of people and critical infrastructure. End users are involved in the development process from the beginning in order to ensure the high quality and acceptance of the systems. The entire innovation process, from component development through to final user interface design is constantly evaluated with all stakeholders involved. Full conformity with European, social and legal framework conditions is central to the acceptance of the technologies developed.



Research and development highlights at the AIT stand 1D82

The technologies and solutions developed by AIT are designed for different application scenarios, e.g. for people counting, access control in high-security interlocks, or the creation of situation maps for control centres. Our experts at the AIT stand 1D82 in hall 1/L-Bank Forum will provide you with information and advice about the following technologies:

- **3D Person Detection & Queue Length Detection:**
  A 3D stereo vision technology developed by AIT enables counting the number of people in a crowd with high reliability in real time. The advantage of the AIT technology is that the system does not rely on overhead cameras so that extensive areas can be monitored with a single system. This makes it possible to generate up-to-date situation maps using multi-camera 3D person detection. The technology can also be used in queue management: it can automatically detect the length of queues and provide relevant information to both security staff and the people waiting. Another field of application can be found in building management, where these systems can be used to count the number of passengers or customers in shopping centres or to measure visitor flows.

- **Person Separation**
  AIT is developing robust and reliable solutions for person detection in high-security areas. These systems are used for example in interlock systems for automated border control in order to achieve maximum security in spite of steadily growing passenger numbers. AIT has established itself as a European centre of expertise in the field of automated border control. The combination of cutting edge sensor technologies and highly secure, easy to use IT systems enables authorities to provide user friendly and secure border control management at airports, seaports and land borders.

- **Smart Intrusion Detection**
  Modern security systems use image-based methods to monitor access to sensitive areas in critical infrastructures. AIT experts work together with companies in the security sector to develop cutting edge security and access control systems for the automatic detection of unauthorised access to sensitive areas.

- **Real-time stereo vision through FPGA technology**
  The FPGA Engine is a solution for real-time stereo matching, enabling cost-efficient and reliable 3D imaging of the environment. The FPGA algorithm rectifies the images prior to stereo matching and provides a disparity map (an inverse depth image) with sub-pixel resolution.

- **Indoor Localization & Navigation**
  The problem of indoor localisation and navigation has not yet been solved satisfactorily because satellite and radio-based systems do not work in these environments or are not accurate enough. AIT researchers have succeeded in developing a novel solution for this problem based on image processing. The system makes use of the fact that each environment looks different from others, thus enabling indoor localisation on a purely visual basis. Image content is analysed and compared with a previously created visual model to localise the positions and viewing directions of surveillance cameras and mobile end devices (mobile phones) in extensive building structures in real time. The system is characterised by high accuracy down to below 1 metre.

- **Mobile Identity Management**
  Fast and reliable identity checks are key to ensure public safety and security. In border control, for example, there is a growing need for mobile solutions and special demand for biometric verification systems to check the identity of people. While biometric identification technologies are already being used in stationary systems, mobile end devices still suffer from problems in terms of usability and applicability. Experts at AIT are developing innovative security technologies for this field of application. In order to protect the technical functions of identity management against misuse and unauthorised access, AIT has joined forces with authorities and service providers to develop a special HW/SW platform meeting the most stringent security requirements (Trusted Platform Module Technology). The mobile end device combines state-of-the-art security technologies, such as OCR detection, face detection or non-contact fingerprint analysis.

Scientific Vision Days

Technology presentations at the AIT stand

This year we again invite you to attend **presentations** on the latest innovations and technologies in the field of image processing. The presentations are given directly at **AIT stand 1D82** by AIT experts, as well as customers and partners from industry and research. Programme details are available at the trade fair and at **www.ait.ac.at/svd**.

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Visit us at Vision 2016

Hall 1, L-Bank Forum
Stand: 1D82

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