

FASTPASS NEWSLETTER #10

Report on Winter 2016

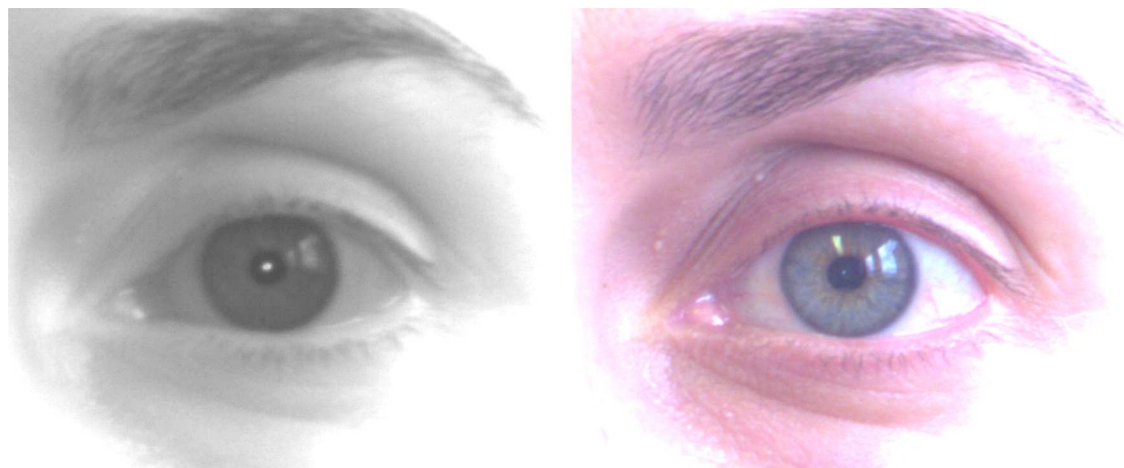


A successful second review for FastPass

The second review of FastPass was held on 1st December 2015 in Uckfield (UK), at the premises of the partner Gunnebo. At this occasion, the Consortium presented the work and results achieved over the second period of the project (May 2014- August 2015), as well as a first prototype of the final installations of the demo sites.

The FastPass WP Leaders and other technical experts from the Consortium met for the second time with reviewers with affiliation to Infineon Technologies AG, Marine Vision and Frontex. Once again, the work achieved was discussed and received very positively. The review report states that the project has accomplished good progress over its second period with a proper utilization of its resources and relevance to its objectives. All deliverables submitted were therefore accepted. The Jury added that the Consortium was able to take into account the recommendations from the first review and has thus managed to focus its work and define a clear positioning towards other projects or initiatives of the field. FastPass also shows a clear separation view of state-of-the-art technologies and of innovative topics while keeping harmonization as a key motif for its research. The main recommendation for the third and last period of the project is to incorporate the lessons learnt from the Smart Border Package pilot – a clear objective that the FastPass Consortium will be happy to fulfill!

CROSS-EYED Competition on Irirs/Periocular Recognition organized by a FastPass Partner



Sample images from CROSS-EYED 2016 Competition Database, © University of Reading

The University of Reading, member of the FastPass Consortium, organizes the first Iris/Periocular Recognition Competition. This is embraced by [BTAS2016](#) – *8th International Conference on Biometrics: Theory, Applications, and Systems*. The CROSS-EYED competition was launched in February and will last till the end of April. The winning team will be awarded at *BTAS2016* in Niagara Falls from 6th to 9th September 2016.

The CROSS-EYED competition targets the problem of iris and periocular (region surrounding the eye) recognition *across* spectrums. The main challenge is to match iris/periocular images captured in the near infra-red (NIR) and the visible wavelength (VW) spectrums.

The benchmark dataset is composed by iris and periocular images captured with a custom made dual spectrum imaging sensor, which acquires NIR and VW face images synchronously, from a distance of around 2 metres.

To date, iris recognition technology has typically been employed under the presence of NIR illumination. This is due to the non-reflective properties of the eumelanin pigment present in the iris texture when exposed to NIR wavelengths. As mobile devices become more ubiquitous, computationally capable and equipped with high quality imaging sensors, a new desirable dimension of a biometric system, besides the accuracy and speed, is the “mobility” of such a system. Therefore, research on iris/periocular biometrics is focusing on less cooperative and unconstrained acquisition environments, such as under VW, and therefore incorporating various types of noise.

This initiative aims at increasing the usability of these recognition technologies on generic devices and diversified scenarios. At the same time, this competition targets border control security, by investigating the possible benefits of matching images from two spectrums and captured in at-a-distance and on-the-move scenarios. Additionally, the dual spectrum approach (as allowed by the benchmark dataset proposed) will allow to overcome limitations of one of the spectrums and to increase reliability of recognition.

Besides the importance of releasing new datasets to the research community, this competition has a main goal to record recent advances in iris and periocular recognition through the contributions of participants, from all over the globe.

FastPass very well represented at the Passenger Terminal Expo (PTE)

One of the major conference and exhibition in the field of airports took place in Cologne from 15.-17.March. FastPass was represented by major partners (AIT Austrian Institute of Technology, Gunnebo Entrance Control, Magnetic Autocontrol, Modi Modular Digits, Regula Baltija, Secunet Security

Networks and Veridos) at the exhibition and a talk in the conference track on "Aviation & Border Security, Control & Facilitation". Particular highlight was a FastPass demo at the booth of Modi, which showed the airborder solution with a two step process. The feedback from visitors was very positive and company representatives reported extraordinary high visitor frequencies. "FastPass is a very interesting project delivering innovations for the border control market. The uptake of the technology by industry partners shows the high relevance of the research and viability of the solutions", explains Markus Clabian, Coordinator of the project. The contacts made and the ideas exchanged at PTE will further direct and facilitate the work in the upcoming demonstrations.

Security Document Reader Interoperability Testing in FastPass

*by Peter Wild, Scientist at AIT Austrian Institute of Technology GmbH,
member of the FastPass Consortium*



Efficient and effective optical authentication of passengers' travel documents is an important, but at the same time also highly challenging task of border control, facing an increasing number of border crossing attempts. Document challenges by Frontex investigating human versus machine-supported approaches have confirmed the need for better harmonization across passport inspection devices ensuring vendor-independence at retained high security levels. At the heart of the challenge to harmonize are questions related to interoperability, standardization and normalized reference document template databases.

One objective of FastPass was and is a solution for interoperability of document readers. At AIT we conducted a document reader challenge investigating inspection devices with regards to optical characteristics and developed new methods for increased interoperability in optical inspection of ePassports' visible data pages. The FastPass interoperability study focused on the following aspects:

1. Benchmarking of Security Document Readers

Highlights of our study trying to benchmark capabilities and identifying key harmonization needs include insights in optical resolution, image quality including noise and geometric distortion, and anti-glare. While good image quality is testified across the board, further color calibration steps for enhanced interoperability are identified and better exploitation of glare with identified potential for inspection of optically variable devices is suggested as future security features in automated solutions.

2. Interoperability Methods

Harmonization across devices ensuring vendor-independence requires the development of standards at hardware level, unified approaches with regards to best-practice normalization methods for cross-reader comparison, and selection of robust optical security features to be investigated. At AIT, we suggested and

implemented color calibration steps, which were verified in experiments to enhance signal-to-noise-ratio performance significantly. After calibration color deviation between devices is sufficiently low, confirming the usefulness of suggested techniques.

3. Data Compression for Document Images

Where the processing of uncompressed data is not an option, e.g., for mobile equipment, limited processing bandwidth in decentralized checks and construction of large template databases of prototype security regions, it is useful to study compression properties of security document's visible data pages. In particular, we tested lossy image compression techniques and found that JPEG and/or JPEG 2000 are not necessarily the best choices for compressing security document images, given faster alternatives (speed-up factors 2-5) are available.

Technical results of the study are currently under review for publication in first-tier conferences and an overview talk on interoperability issues will be given at the upcoming Secure Document World 2016 Conference.

Meet the Consortium!

The FastPass Consortium will participate in the **Identities at the Borders & Movement of People Seminar**. Organized by the Biometrics Institute, this event will take place in Amsterdam on 19-20 April 2016.



The FastPass Consortium will be present at the
Security World Document 2016.

This event will take place in London from the 10th to the 12th of May 2016.

Our archived newsletters are available [here](#) !



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