Graduation project/internship at JOA Scanning Technology:

**Fast and Accurate Baggage Scanning by Real-Time Automated Analysis of Safety Officer’s Gaze**

**Important information**

**Duration:** 6 months (or longer)

**Application deadline:** September 24th 2018

**Contact:** Dr. Peter-Paul van Maanen ([peter-paul@joascantech.com](mailto:peter-paul@joascantech.com))

**Company:** JOA Scanning Technology BV, Delft

**Working location:** Groothandelsgebouw, Stationsplein 45, Rotterdam

**Period:** October 1st 2018 -- March 31st 2019 (or later)

**Fin. compensation:** 500 euro gross per month, incl. travel expenses etc.

**About us**

JOA Scanning Technology is a company that develops solutions that significantly improve the speed and quality of visual inspection of hand baggage as performed by transportation safety officers (TSOs) at airports. International airports make the news too often with long queues and people missing their flights. At the same time, there is an increase in security threats. Our patent pending methodology utilizes gaze data and machine learning algorithms to quickly and automatically extract the TSO’s own intuitive classification of the images. This is then used to reduce the risk of missing critical security violations in hand baggage and to improve the certainty that checked baggage indeed does not contain threats. Our results show that this can be done in much shorter time than the time it currently takes.

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**Your challenge**

You will be working on new machine learning methods to further improve the classification (i.e. search/pass) of 2D or 3D X-ray images of hand baggage at airports. The classification model is trained...
using a large number of images and amount of eye-tracking data. You will first work on a data set that has already been collected for this purpose (see Figure 1). After you have implemented and tested several classification methods on this data, you will evaluate the best methods in your own experiments. The results will help in our effort to create software that can support TSOs in real-time. Our goal is to integrate such technology in existing X-ray inspection devices world wide (s.a. in Figure 2).

Your background
We are looking for students with the following background:

1) Studying a Master’s Degree of Artificial Intelligence or comparable
2) High grades for relevant courses (esp. on machine learning)
3) Ready for final graduation (Master’s) project
4) Preferably no other projects or courses
5) Familiar with experimental data (e.g. eye-tracking or comparable data)
6) Smart, pro-active and team player
7) Fluent in written English
8) OK to work full-time + at least several days a week at our office

Our offer
We offer a position for at least six months up to one year with good financial compensation and guidance of two machine learning specialists. There is also support to travel to present the results in the international community.

Application
Interested? Please send your application letter, list of grades and CV to peter-paul@joasctech.com before the application deadline. Any questions are also welcome. See you soon!