Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center

Linder Höhe
D-51147 Köln
Telephone: +49 (0)2203 601-0
Internet: http://www.dlr.de

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Kennedyallee 50 – D-53175 Bonn
Telephone: +49 (0)228 882-0
Telefax: +49 (0)228 882 448
E-mail: dlr-daad-program@daad.de
Internet: http://www.daad.de

DLR – DAAD – Fellowships

Fellowship - No. 339

Research Area : Aeronautics ☐ Space ☐ Transportation **X** Energy ☐

Research Topic: **Human crowd analysis in aerial image sequences using deep learning techniques**

DLR Institute: **Remote Sensing Technology Institute (IMF) at DLR Oberpfaffenhofen**

Position: Doctoral Fellow **X** Postdoctoral Fellow ☐ Senior Scientist ☐

Openings: 1

Job Specification: The main objective of this PhD project is to push the boundaries on the automated analysis of humans and their behavior in airborne images and image sequences with novel computer vision methods. High-resolution optical sensors make it possible to “zoom in” on humans, and not only localize them in an aerial scene, but estimate their pose, track them, and predict their trajectory and behavior. The fine-grained classification of crowd behavior will provide invaluable insights that will improve public safety, will help ward off catastrophes such as panic-driven stampedes, and inform future planning of large-scale events. To this end, as part of this PhD, novel crowd understanding algorithms will be developed that will rely upon and make contributions in deep learning and in more general machine learning.
The annotation of videos of dense crowds is an extremely tedious task, therefore measures will be taken, on the one hand, to cost-effectively obtain annotations and, on the other hand, to use proxies, in the form of photorealistic synthetic data, to train, calibrate, and evaluate the proposed algorithms.

Required Qualification:	Candidates should have a Master's or Engineering Degree in Computer Science, Visual Computing or a related discipline. A strong mathematical background and solid programming skills, preferably in Python or C/C++, are required. Previous experience in computer vision, computer graphics, or image processing is highly desirable. The successful candidate must be highly motivated and must have demonstrated the ability to perform independent work. They must also posess excellent communication skills.
Advantageous Skills:	Experience with deep learning frameworks, such as TensorFlow, Keras, PyTorch, Theano, Caffe, etc. is of advantage.
English competence:	Fluent in written and spoken English.
Earliest Start Date:	September 2018
Application Deadline:	Open until filled
Further Information:	http://www.dlr.de http://www.daad.de/dlr