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DLR – DAAD Fellowships

Fellowship No. 600

Research Area : Aeronautics

Research Topic: **Local Bird Movement Prediction to Evaluate the Risk of Wildlife Strikes in Aviation**

DLR Institute: Institute of Flight Guidance, DLR Braunschweig, Germany;
in collaboration with the University of Amsterdam, the Netherlands

Position: Doctoral Fellow

Openings: 1

Your Mission: Collisions between wildlife and aircraft are a threat to human life and kill millions of animals every year. Most of these wildlife strikes occur at altitudes of up to 1,000 meters. Conventional aircraft such as airliners are most vulnerable during take-off, initial climb, approach and landing. Currently, most measures to prevent strikes focus on keeping animals away from airport perimeters. To achieve a higher level of safety, it is proposed to include air traffic controllers into the loop by providing them with real-time information on the risk of wildlife strikes. This would enable them to warn pilots, advise avoidance maneuvers or delay take-offs to avoid colliding with animals. To make this concept feasible, reliable information on the presence and movement of critical wildlife in general and birds in particular around flight paths is needed. The aim of this PhD project is to develop a model for predicting bird tracks and assessing their risk to aviation, based on several years of avian radar data. The model will be validated in fast-time simulations. In a second step, a workflow to adapt the model to different sites will be established and tested. Finally, the model output will be made applicable to operational air traffic control via an appropriate visualization. If successful, this project will enable air traffic controllers to consider the current risk of collision for aircraft under their control to a much greater extent than is currently the case. This, in turn, will help take bird strike prevention to the next level, making a fundamental contribution to wildlife and aviation safety.

Required Qualification:

- M.Sc in aerospace engineering, computational science or similar with strong interest in biology and ecology or M.Sc in biology, ecology or similar with strong interest in computational science
- Good programming skills (e.g R, python)
- Good writing skills in English (as shown in e.g. the MSc thesis, reports from other projects or publications)

Advantageous Skills:

- Experience in handling of Big Data is
- Experience with Machine Learning and Artificial Intelligence techniques
- Experience in working with trajectory data
- Understanding of modelling and simulation techniques
- Basic understanding of Air Traffic Management processes
- Publishing experience (conference and/or journal papers)

Your Benefits:

The PhD position is offered in collaboration between the Institute for Biodiversity and Ecosystem Dynamics IBED of the University of Amsterdam in the Netherlands and the Institute of Flight Guidance of the German Aerospace Center DLR in Braunschweig, Germany. This gives you the unique opportunity to carry out this interdisciplinary project as a member of two leading European research groups in ecology as well as aeronautics.

Your home base at DLR will be at one of the hubs of air traffic management research located at the Braunschweig Research Airport in Germany. With 27 major research institutions, the Braunschweig area builds the heart of Europe's most research-intensive region. Two universities ensure a vibrant student life within the medieval city center and its green surroundings with the Harz Mountains just around the corner.

Regular visits to your research group at the IBED in Amsterdam ensure your access to the scientific excellence in the fields of ecology and biology to support you in these aspects of your PhD project. In addition, this provides you with the chance of increased intercultural exchange and to fully immerse yourself in PhD life at the university.

English Competence: See requirements on www.daad.de/dlr

Earliest Start Date: 1 May 2024

Application Deadline: 31 March 2024

Application process: Please apply via the DAAD portal

Questions? please get in touch with

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Further Information: <http://www.dlr.de>
<http://www.daad.de/dlr>

Thank you for your attention!
We look forward to receiving your application!