

In the field of innovative software technologies, the German Research Center for Artificial Intelligence GmbH (DFKI) is the leading research institution in Germany, and in the international science community the DFKI ranks among the most important “Centers of Excellence” worldwide.

Within the “*On-Orbit Servicing with Robotic Manipulators*” project of the Stardust Reloaded (Stardust-R) European Training Network (ETN) at DFKI Robotics Innovation Center in Bremen (Prof. Dr. Dr. h.c. Frank Kirchner) there is an open position with a start date in **October 2019** for an

## Early Stage Researcher (m/f) – Stardust-R - ESR10

The candidate will work full-time in the field of space robotics towards the goal of developing and experimentally testing control algorithms for an autonomous free-floating manipulator system to capture and manipulate both non-cooperative and cooperative targets.

The duration of employment is 3 years and during that time the candidate will be offered the possibility to be enrolled in the Ph.D. programme at the University of Bremen under the supervision of Prof. Dr. Dr. h.c. Frank Kirchner.

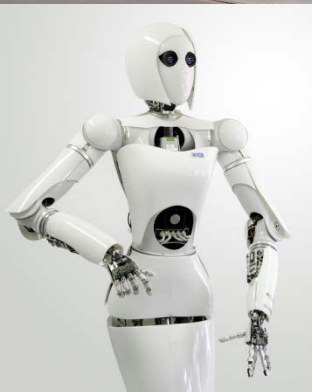
### Your tasks:

- Development of on-orbit servicing and active debris removal disposal solutions
- Development of a real-time control system for a free-floating space manipulator to ensure the execution of a reference trajectory despite disturbances and parameters uncertainty
- Development of control strategies to deal with contact interactions in microgravity and their evaluation using an underwater vehicle
- Test final concepts on the flat-floor of the orbital robotics lab of ESTEC-ESA
- Participate in training events and meetings within the network and at international conferences/workshops outside the network
- Participate in outreach activities of the network such public seminars, workshops, journal clubs, etc.
- Disseminate scientific results through a book chapter, a wiki page, papers, articles, etc.

### Your qualifications:

- Master’s degree (or comparable academic degree) in Engineering, Physics, Mathematics or a related field (*earned at the date of recruitment*)
- Thorough background in multi-body kinematics and dynamics
- Very strong C/C++/Python programming skills
- Strong background in robot modelling, planning and control
- Experience with a robotics middleware such as ROCK, ROS, etc.
- Experience in real time operating systems and Hardware-in-the-Loop systems
- Familiarity with orbital robotics and/or underwater robots
- Experience in international collaboration across industrial and scientific communities

Excellent spoken and written command of English is required, basic German language skills are a plus. We are looking forward for a talented and highly motivated candidate. He/she should have an independent and well-structured working style, but has to be able to work in teams as well.



The candidate should, *at the date of recruitment*, be in the **first 4 years of his/her research career** and **not have a doctoral degree**. Moreover, the candidate should **not have resided in Germany for more than 12 months in the 3 years immediately before the recruitment date** (and not have carried out their main activity (work, studies, etc.) in it) - unless as part of a procedure for obtaining refugee status under the Geneva Convention.

The Stardust Reloaded project is a European research project funded by the Marie Skłodowska-Curie Actions Innovative Training Networks (ITN) action of the European Union Horizon 2020 (H2020) program. The project addresses the growing need for a sustainable exploitation of space, the resilience of the space environment, the threat and opportunities coming from asteroids and the compelling need for properly trained specialists who can tackle these issues.

Stardust-R comprises 20 partners, including the European, French and German aerospace agencies that will support 15 early-stage career researchers (ESRs). The ESRs will be trained in mathematics, physics, computer science, robotics and aerospace engineering to provide effective solutions to make the space environment resilient, space exploitation sustainable learn more about minor bodies and ultimately protect Earth and our space assets. The envisioned forms of training are: training through research, Project Working Groups, tutorials and webinars, secondments, training schools, workshops, and a design challenge.

The research programme is divided in 8 work packages (WPs) that address existing or emerging problems with a huge impact on the future of our planet, the space environment and the space sector, and is driven by two key areas of application: Space Traffic Management (STM) and the Exploration, Exploitation of Minor Bodies (EEM). Each WP is developed by at least one ESR and all will contribute to one of the two above mentioned topics. The involvement of each ESR in multiple WPs and the concurrent work of multiple ESRs will promote collaborations, interdisciplinarity and cross-sectorial activities with the precise goal to integrate the enabling technologies developed in individual WPs into STM and EEM WPs.

The ESR at DFKI will be more dedicated to STM and will develop robotic technologies to transform space debris into a commercial opportunity, as per the H2020/ESA PERASPERA programme, via on-orbit servicing. Moreover, the ESR is expected to perform a 6 months secondment at the Automation & Robotics group of ESTEC-ESA, under the supervision of the head of the group, Mr. Gianfranco Visentin.

For more information about the project please visit: <http://www.stardust-network.eu/> or contact us via Twitter [https://twitter.com/Stardust\\_H2020](https://twitter.com/Stardust_H2020) or Email [info@stardust-network.eu](mailto:info@stardust-network.eu).

DFKI is an equal opportunity employer. Women are especially encouraged to apply. Handicapped applicants with equal qualification will be given preferential treatment.

If you are interested in this position please prepare the following documentation:

**a)** a CV (*using the provided CV template*), **b)** an application letter, stating clearly your motivation, qualifications and ranked preference for a *maximum of 2 ESR positions* within the Stardust-R project, **c)** two letters of reference (*preferably sent directly by referees*), **d)** copies of all relevant academic transcripts and certificates in English;

and send it within **31 March 2019** to:

**University of Strathclyde**  
**Department of Mechanical & Aerospace Engineering**  
Professor Massimiliano Vasile  
James Weir Building, 75 Montrose Street  
Glasgow, G1 1XJ  
[info@stardust-network.eu](mailto:info@stardust-network.eu)

Curious about DFKI RIC and Bremen? For more information, visit [www.dfki.de/robotik](http://www.dfki.de/robotik)!