

## “Expression of Interest” for hosting Marie Skłodowska-Curie Postdoctoral Fellowships in Germany

Institutions interested in hosting postdoctoral fellows within the Marie Skłodowska-Curie Postdoctoral Fellowships programme should use this template. Host institutions should be located in Germany.

### 1. Valid for the following MSCA-PF Call<sup>1</sup>:

Please tick:

2021

2022

### 2. Interested host institution:

The **Fraunhofer Institute for Integrated Circuits IIS** is one of Germany's most important industrial applied research facilities for the development of microelectronic systems. The scientists in the Division Engineering of Adaptive Systems EAS, located in Dresden, develop key technologies for the connected world of tomorrow.

Major aspects of their work are the design of reliable microchips and complex electronic systems in leading-edge semiconductor technologies as well as the corresponding design methods. Furthermore, they focus on the development of intelligent sensor systems, the analysis of large amounts of data as well as on new approaches for distributed control systems.

Tailored to current industrial needs and future challenges, the researchers work on adaptive and robust technological solutions in a broad range of applications such as mobility, industrial automation, and energy systems.

*Name of EU liaison officer (EU-Referent/in), if applicable: Corinna Kündscher-Rettinghaus*

### 3. Institute/Department:

Fraunhofer Institute for Integrated Circuits IIS  
Division Engineering of Adaptive Systems EAS  
- *Distributed Data Processing & Control* -  
Zeunerstrasse 38  
01069 Dresden, Germany

Website: <https://www.eas.iis.fraunhofer.de/en.html>

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<sup>1</sup> MSCA Postdoctoral Fellowships are selected on the basis of annual calls for proposals. Forthcoming and open calls for proposals can be found on the [Funding & tender opportunities Portal](#) of the European Commission.

#### 4. Contact person (name and e-mail address):

Dr. Dirk Mayer ([dirk.mayer@eas.iis.fraunhofer.de](mailto:dirk.mayer@eas.iis.fraunhofer.de))

- distributed data processing & control
- Dep. Manager Distributed Data Processing & Control

Corinna Kündscher-Rettinghaus ([corinna.kuendscher@eas.iis.fraunhofer.de](mailto:corinna.kuendscher@eas.iis.fraunhofer.de))

- Scientific Management

#### 5. Project idea/position (scientific requirements, topic, discipline):

*Rough outline of idea/position:*

**1. Co-Design and Co-Management of communication and control of distributed cyberphysical systems:** Robotics are a key technology in the industrial production, logistics and medical technology. The next step towards even more flexible and efficient systems are self-organizing, collaborating robots. This will require advanced methods of distributed control and machine learning implemented on embedded platforms to form networks of communicating, learning agent systems.

➤ Potential topics for fellowships include:

Model based systems design of distributed systems, distributed adaptive control or collaboration of cyberphysical agents.

**2. Distributed AI in Sensor-Edge-Cloud Systems:** Modern computing platforms are more compact and power efficient. This enables shifting parts of the data analysis process towards the edge and even to smart sensors. With respect to today's complex AI training and inference algorithms, and the variety of potential target platforms ranging from small microcontrollers to embedded multicore processor systems, methods and tools are needed for automatic partitioning and distribution in sensor-edge-cloud networks.

➤ Potential topics for fellowships include:

Implementation of AI on low power sensor platforms, model based systems engineering of AI in (low power) sensor networks, Adaptation of AI algorithms for the implementation in networked systems.

**Please tick:**

Life Sciences

Natural Sciences

Engineering Sciences

Social Sciences and Humanities