

Call for applications: Research assistant (m/f/d) for demonstrator development and visualization (WHF)

The
Lamarr Institute for Machine Learning and Artificial Intelligence
at the Technical University of Dortmund, Faculty of Computer Science
is looking for

a committed and technically interested research assistant (m/f/d), for the development and construction of demonstrators and exhibits for the visualization of machine learning methods and their application. Currently, the Institute is constructing a demonstrator of the IceCube neutrino detector, an application of ML in physics.

The offer is aimed at students of the TU Dortmund University and University of Applied Sciences Dortmund (or comparable institutions) with experience in 3D printing / CAD, electronics and/or microcontroller programming. A professional background in computer science, machine learning and artificial intelligence is not necessary but helpful. The number of hours can be discussed individually. Compensation is provided in accordance with the TU's guidelines for research assistants. The position is initially limited to one year. An extension by mutual agreement is possible.

Area of responsibility:

The main task of the position is to support our research assistants in the development and construction of exhibits and demonstrators for the visualization of machine learning methods and their application. A first concrete task is to support the further development of an existing model of the IceCube neutrino detector. The model is a visualization of neutrino events by means of addressable LED stripes. Future plans aim at, e.g., the augmentation of ML predictions on these events. The overall goal is to have a production ready model, since we aim to build several copies of the exhibit. After completion of the IceCube demonstrator, further exhibits are being planned.

In this context, we are looking for support in the following tasks:

- Design (e.g. 3D models, CAD drawings, PCB design) and assembly of the exhibit (e.g. planning and assembly of the 2nd Gen. LED Modules, design and assembly of the LED Module brackets)
- Further Development of the associated electronics (e.g. PCB design, soldering)
- Programming of the associated micro-controllers (ESP32) and single-board computers (RaspberryPi). In particular, the existing firmware of the ESP32 MCUs and the control software on the RaspberryPi will be optimized and developed further.

- Design and development of the user interface of the model (e.g. touch panel to control the model and augmentation of ML predictions)

Requirements:

- Enrollment at the Technical University of Dortmund, Dortmund University of Applied Sciences or a comparable institution, for example with a background in mechanical engineering, electrical engineering, automation and robotics, physics or computer science.
- Bachelor's degree in one of the fields mentioned above or a comparable field
- Basic knowledge in the field of electronics, PCB and 3D design.
- Practical exposure to programming micro-controllers and Python.
- High level of independence, initiative, reliability and ability to work in a small team
- Technical skill and careful way of working
- Ideally, an interest in machine learning and artificial intelligence topics. However, specialist knowledge is not necessary.
- Willingness to work primarily on-site in Dortmund

We offer:

- An exciting job in a dynamic and innovative environment in one of the most important research areas in Germany at the moment
- The opportunity to participate in the promising research field of machine learning methods and thus expand your own job profile.
- Flexible working hours that can be easily combined with your studies (e.g. before exams)
- The opportunity to gain valuable experience in the field of design, electronics and programming.
- Long-term cooperation (further demonstrators are planned)
- Good transport connections
- A friendly and motivated team that looks forward to your support

Application:

Please send your detailed application, including your CV and the usual relevant documents (e.g. copies of certificates, academic achievements), as a PDF by e-mail to:

jens.buss@tu-dortmund.de.

If you have any questions, please do not hesitate to contact us.

We look forward to receiving your application documents.

We promote diversity and equal opportunity. Impress us with your personality and expertise.

Applications from women will be given preferential consideration in accordance with legal regulations.

To ensure that a severe disability is taken into account, please provide appropriate documentation.

Further information about our institute, its research areas and activities can be found at <https://lamarr.cs.tu-dortmund.de> (Lamarr Institute, Dortmund site) or <https://lamarr-institute.org/> (Lamarr Institute, General).