You are highly motivated with a passion for solving real-world scientific challenges? Do you want to push the limits of AI-powered live-cell microscopy and help decode how gut microbes behave to develop biomedical therapies? Join us at the interface of machine learning, computer vision and microbiome research to turn microfluidic live-cell imaging into a smart, autonomous platform for future clinical gut microbiome diagnostics. This position is ideal for postdocs who are passionate about technological innovation, interdisciplinary science, and entrepreneurial impact.

We are looking to recruit as soon as possible a

Postdoc / Research Software Engineer – Real-Time Live-Cell Image Analytics and Experimental Control

Your Job:
Microorganisms in the gut microbiome play a key role in health and disease, but their behavior in complex, dynamic microenvironments is still poorly understood. Within a Helmholtz collaboration, we are building a high-throughput single-cell analysis platform that combines microfluidics, advanced imaging and AI-based analysis to study gut microbial consortia.

You will drive the development of the next-generation image analysis and control framework for microfluidic live-cell analytics in close collaboration with partners at HZI, Helmholtz Munich and HHU.

Your tasks in detail:
- Establish deep-learning–based segmentation, species classification and lineage tracking workflows for multi-species time-lapse data
- Optimise models and pipelines for real-time performance, enabling adaptive imaging and feedback
- Develop active learning and retraining pipelines to adapt to new consortia
- Implement event-triggered, autonomous experiment control to steer imaging in space and time

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our
Online-Recruitment-System!

Questions about the vacancy?
Get in touch with us by using **our contact form.**
Please note that for technical reasons we cannot accept applications via email.
www.fz-juelich.de

- Provide FAIR analytics workflows and contribute open source tools for use in data analysis
- Present your results at international conferences, publish in peer-reviewed journals, and contribute to training activities within the consortium

Your Profile:
- Excellent Master and subsequent PhD in computer science, engineering, biophysics, applied mathematics, computational biology or a related field
- Proven programming expertise in Python (PyTorch, scientific Python) with solid experience in scientific computing and software development; familiarity with C++ and Linux environments is an advantage
- Strong background in deep learning for image analysis / computer vision, ideally on microscopy or time-lapse data
- Experience in at least one of: tracking / time-series analysis, probabilistic modelling / uncertainty, real-time or streaming pipelines
- Strong mathematical / statistical background, with pronounced analytical and problem-solving skills
- No prior wet-lab experience is required; curiosity for biological questions and willingness to collaborate with experimentalists is sufficient
- Excellent collaboration and communication skills, and enjoyment of working in an international, interdisciplinary research team
- Prior research experience (e.g. internships, thesis projects, open-source software contributions, or publications) is highly desirable
- Excellent English skills; German is a plus but not required

Our Offer:
We work on highly topical, socially relevant issues and offer you the opportunity to actively shape change! You can expect a wide range of opportunities:
- INTERDISCIPLINARY WORK: An exciting, interdisciplinary research environment at the interface of AI, imaging and microbiome research in an Helmholtz-wide collaboration
- CUTTING-EDGE INFRASTRUCTURE: Access to state-of-the-art imaging, microfluidics and computing infrastructure
- INNOVATION & TRANSLATION: Opportunities to engage in technology translation and spin-off preparation within FZJ's innovation ecosystem
- KNOWLEDGE & FURTHER TRAINING: Comprehensive training and development opportunities for personal and professional development with support from experienced PIs.
- FLEXIBILITY: Flexible working time models, including options close to full-time (https://go.fzj.de/near-full-time), allow you to tailor your working hours to suit your individual needs
- VACATION: You will receive 30 days of vacation plus additional days off (e.g. between Christmas and New Year`s)
- FAIR REMUNERATION: Depending on your existing qualifications and the tasks assigned to you, you will be classified in pay grade 13 of the TVöD-Bund (Collective Agreement for the Public Service). All information on the TVöD-Bund collective agreement can be found on the BMI website: https://go.fzj.de/bmi.tvoed . The monthly salaries in euros can be found on page 69 of the PDF download
- FIXED-TERM: The position is limited to 3 years
- SUPPORT FOR INTERNATIONAL EMPLOYEES: Our International Advisory Service makes it easier for international employees to get started

In addition to exciting tasks and a collegial working environment, we offer you much

more: https://go.fzj.de/benefits

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

The following links provide further information on diversity and equal opportunities: https://go.fzj.de/equality and on specific support options for women: https://go.fzj.de/womens-job-journey