Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Postdoc in Machine Learning of Multimodal Spatial Single-Cell Data

The group of „Quantitative Single-Cell Biology of the Immune System“ (https://www.med.uni-wuerzburg.de/en/systemimmunologie/research/quantitative-single-cell-biology-of-the-immune-system-gruen-lab/) at the Würzburg Institute of Systems Immunology, Julius-Maximilians-University Würzburg, is looking for a computational postdoc for multimodal spatial single-cell data analysis using machine learning and artificial intelligence. The research group of Prof. Dr. Dominic Grün studies regulation of cell fate decision in multicellular tissues in the context of development, disease, and regeneration.

You will focus on the development of new algorithms for dynamic modeling of cell-cell interactions in tissues by integrating multimodal single-cell sequencing data with single-cell resolution spatial transcriptomics data. You will apply machine learning approaches for in silico prediction of the effect of cell-specific gene perturbations on the tissue niche across spatial scales and molecular layers, and adapt approaches for gene regulatory network analysis to describe cellular networks in tissues towards infering cellular circuits.
You will interact with experimental scientists in the lab to design single-cell sequencing and spatial transcriptomics experiments for addressing specific hypotheses related to disease response and regeneration in liver, heart, and bone marrow.

You will join an international vibrant hybrid group of experimental and computational biologists at the Institute of Systems Immunology with excellent computational and experimental infrastructure. The group is affiliated with the CAIDAS Center for Artificial Intelligence and Data Science (https://www.uni-wuerzburg.de/caidas/home/) providing opportunities for direct collaboration with machine learning experts, to enable transfer of cutting-edge data science to single-cell analysis.

This position will initially be given for two years with the option to be extended. Salary and benefits are based on the public service positions in Germany (TV-L).

Expected qualifications:

- PhD in natural sciences, physics, life sciences, informatics, mathematics (or similar)
- Programming proficiency in Python (PyTorch, scikit-learn etc.), and ideally R
- Proficiency of deep learning and other machine learning techniques
- Experience with single-cell sequencing data analysis
- Experience with image analysis is a plus
- Experience with data visualization
- At least one first author paper in an international peer-reviewed journal
- Fluency in English

The University of Würzburg strives to increase the proportion of women in research and teaching and therefore expressly requests applications from suitably qualified female scientists.
Severely handicapped applicants will be employed preferentially if their aptitude is otherwise essentially the same.

Please submit your application documents by December 15th to systemimmunologie@uni-wuerzburg.de