The Ries group at the EMBL Heidelberg and the Macke Lab at the Excellence Cluster Machine Learning University of Tübingen are looking for

Postdoctoral scientists and scientific programmers

for a collaborative project on developing **simulation-based deep learning algorithms for computational microscopy.**

The project: Single-molecule localization microscopy (SMLM) is a super-resolution technique that can achieve nanometer resolution by determining precise positions of single fluorophores. In a collaborative effort, we recently developed DECODE, a deep-learning based software that extends SMLM to densely labeled samples and fast live-cell imaging (Speiser et al, Nature Methods, 2021). The goal of the BMBF-funded project *'Simalesam'* is to develop deep learning algorithms that maximize resolution for all variants of SMLM, even under challenging imaging conditions. To this end, we will develop a detailed simulation engine of the imaging process, and machine learning

algorithms for data-driven optimization of simulations and image analysis. We will share these algorithms through easily usable and powerful software packages.
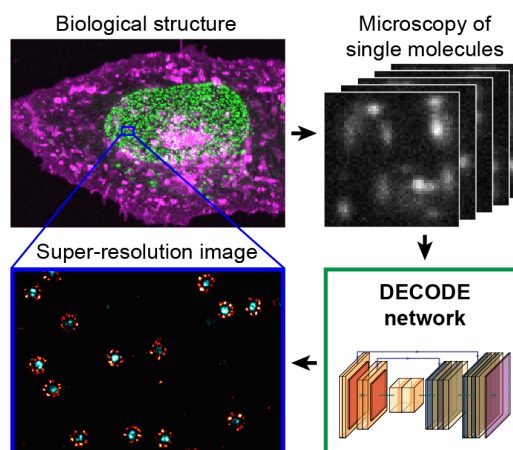
You: We are looking for postdoctoral researchers and scientific programmers with a focus on deep learning for SMLM (Ries group, Heidelberg) and probabilistic deep learning (Macke lab, Tübingen). We are looking for talented, motivated individuals who work well independently, as well as in a team. You should have a background in a quantitative discipline (e.g., physics, bioinformatics, engineering, mathematics, computer science) or software engineering, and strong programming skills and genuine interest in interdisciplinary work. Prior experience in either machine learning or image analysis for microscopy is advantageous.

Our work environment: Our groups specialize in super-resolution microscopy and computational methods for image analysis (Ries) and in probabilistic deep learning methods for scientific applications (Macke). The Ries group is part of the European Molecular Biology Laboratory (EMBL), which is Europe's flagship research laboratory for the life sciences – an intergovernmental organization performing scientific research in disciplines including molecular biology, physics, chemistry and computer science. The Macke lab is part of the internationally renowned research community in artificial intelligence in Tübingen, including the Cyber Valley Initiative, the Tübingen AI Center, the Excellence Cluster Machine Learning, and the International Max Planck Research School 'Intelligent Systems'. We aim to provide a collaborative and supportive work environment which emphasizes diversity and inclusion. We particularly encourage female applicants to apply.

How to apply: Please submit your application to jonas.ries@embl.de and mls-jobs@inf.uni-tuebingen.de, with subject 'Simalesam Postdoc/Programmer'. Please include a CV, a brief statement of research interests, contact details of two referees and a work sample (e.g. code or a manuscript). The project provides fixed-term contracts for up to two years, with a possibility for extension. In case of equal qualification and experience, physically challenged applicants are given preference.

Application deadline: November 30, 2021. Candidates are encouraged to send their application material early since we will start reviewing applications already before the deadline.