Cell Data Sets and Tracking Metrics

The orchestrated movement of thousands of cells is essential for many biological processes such as embryonic development or wound healing, whereas disruptions in it can lead to diseases. To better understand how cells migrate, thousands of cells need to be followed over time. Therefore, we need automated cell tracking approaches.

To compare different tracking algorithms, benchmark data sets as well as metrics are important. And this is where your work comes into play. I’m looking for a motivated student who wants to conduct systematic research on publicly available cell data sets, implement an interface for a Python package that provides tracking metrics, as well as extend this Python package by state-of-the-art tracking metrics. By systematically searching for publicly available cell data sets and extending tracking benchmark packages, you provide the foundation to better compare existing cell tracking algorithms as well as help to spot limitations of recent cell tracking algorithms.

Please note: If you are interested, it is possible to write a seminar, bachelor, or master thesis on a related topic later on.

Requirements:
- Solid Python skills
- Basic knowledge of tracking is an advantage
- Knowledge or motivation to do systematic literature research
- Approx. 35h / month
- Earliest start date: anytime