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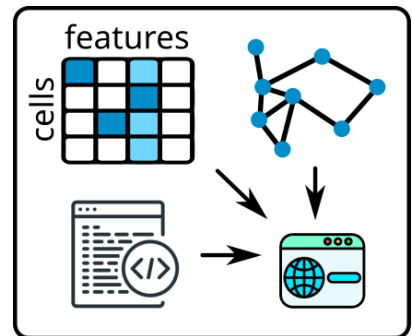
Title: Zero-backend single cell analysis

Supervisors:

Dr. Fabio Zanini (<https://fabilab.org>)

Project timeline: 1-3.5 years.

Project description: In the last decade, single cell omics have revolutionised biology and medicine, enabling researchers to gain biomedical insight with extreme detail and precision. Nonetheless, new researchers picking up single cell analysis are met with a high entry barrier: months of training in coding, data science, package installation, and so on, resulting in a dramatic slowdown of biomedical research.



This project aims to **democratise accessibility to single cell analysis** by building a software environment that runs in the user's web browser and delivers biomedical insights within minutes without any requirement for programming literacy. The candidate will achieve this goal by encapsulating fundamental single cell analysis tools in a browser environment using web assembly (WASM) technologies and orchestrating them client-side in Python and JavaScript. Network analysis, high-dimensional data science, and deep learning will be combined as required.

Team and skills: The candidate will join an interdisciplinary, well-resourced, internationally connected research team and develop advanced skills in biomedical research, focusing on the computational side exclusively. Single cell analysis, bioinformatics, machine learning and software engineering will be integrated daily. The student will be mentored and guided towards scientific independence.

Requirements: A strong background in computational biology is expected. Candidates with deep knowledge of data science or software engineering and an interest in biology or medicine will be considered as well. The student should be curious, motivated, fast-learning, and passionate about science. Knowledge of single cell omics is a plus.

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