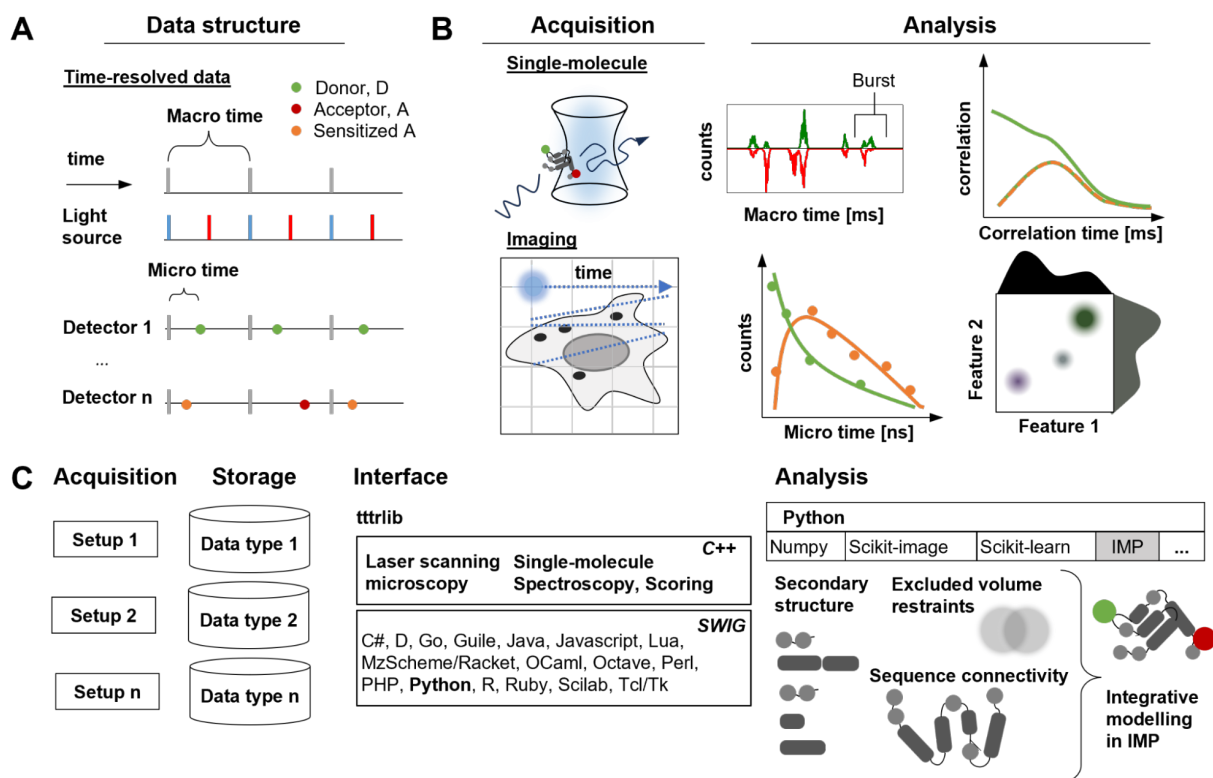


tttrlib: modular software for integrating fluorescence spectroscopy, imaging, and molecular modeling



We introduce software for reading, writing and processing fluorescence single-molecule and image spectroscopy data and developing analysis pipelines to unify various spectroscopic analysis tools. Our software can be used for processing multiple experiment types, e.g., for time-resolved single-molecule spectroscopy, laser scanning microscopy, fluorescence correlation spectroscopy, and image correlation spectroscopy. The software is file format agnostic, processes and outputs multiple time-resolved data formats. Our software eliminates the need for data conversion and mitigates data archiving issues.

Availability and implementation

tttrlib is available via pip (<https://pypi.org/project/tttrlib/>) and bioconda while the open-source code is available via GitHub (<https://github.com/fluorescence-tools/tttrlib>). Presented examples and additional documentation demonstrating how to implement *in vitro* and live-cell image spectroscopy analysis are available at <https://docs.peulen.xyz/tttrlib> and <https://zenodo.org/records/14002224>.