# Instrumentation (Python and PerfStubs in general)

https://tinyurl.com/stw-pstubs

# <TL/DR> (outbrief)

PerfStubs is a macro-based effort to add simple plugin interface to any application/library (C/C++/Fortran) to integrate a tool at runtime (similar to OMPT, Kokkos), integrated into ADIOS2, PETSc, Ginkgo, CAMTIMERS, ZeroSum

Prototyped effort to add Python support for both legacy and 3.12+ profiling/tracing for any/all tools to use - function entry/exit callbacks, selective measurement support, thread safety, Spark/TensorFlow/PyTorch support

PerfStubs team (UO) happy to work with implementers and address any problems that arise

#### https://github.com/UO-OACISS/perfstubs

#### PerfStubs

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Profiling API for adding external tool instrumentation support to any project.

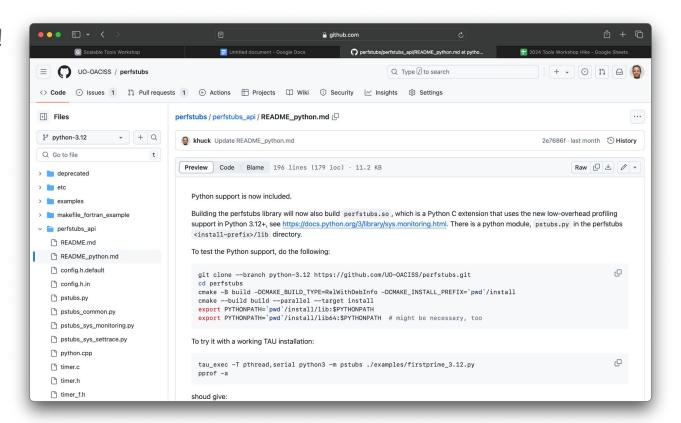
This was motivated by the need to quickly add instrumentation to the <u>ADIOS2</u> library without adding a build dependency, or tying to a specific measurement tool.

The initial prototype implementation was tied to TAU, but evolved to this more generic version, which was extracted as a separate repository for testing and demonstration purposes.

For a more extensive readme, see <a href="mailto:perfstubs\_api/README.md">perfstubs\_api/README.md</a>.

### https://github.com/UO-OACISS/perfstubs/tree/python-3.12

python-3.12 branch!



# https://docs.python.org/3/library/sys.monitoring.html

Python 3.12 introduced sys.monitoring to replace sys.settrace / sys.setprofile <a href="https://docs.python.org/3/library/sys.html#sys.setprofile">https://docs.python.org/3/library/sys.html#sys.setprofile</a> for reference

Lower overhead, more control for selective measurement, multi-thread support

More info: <a href="https://peps.python.org/pep-0669/">https://peps.python.org/pep-0669/</a>, <a href="https://blog.jetbrains.com/pycharm/2024/01/new-low-impact-monitoring-api-in-python-3-12/">https://blog.jetbrains.com/pycharm/2024/01/new-low-impact-monitoring-api-in-python-3-12/</a>

Goal: provide common measurement plugin for any tool, using perfstubs Include backwards compatibility with older Python for completeness, benchmarking Prototyped, works but can be improved.