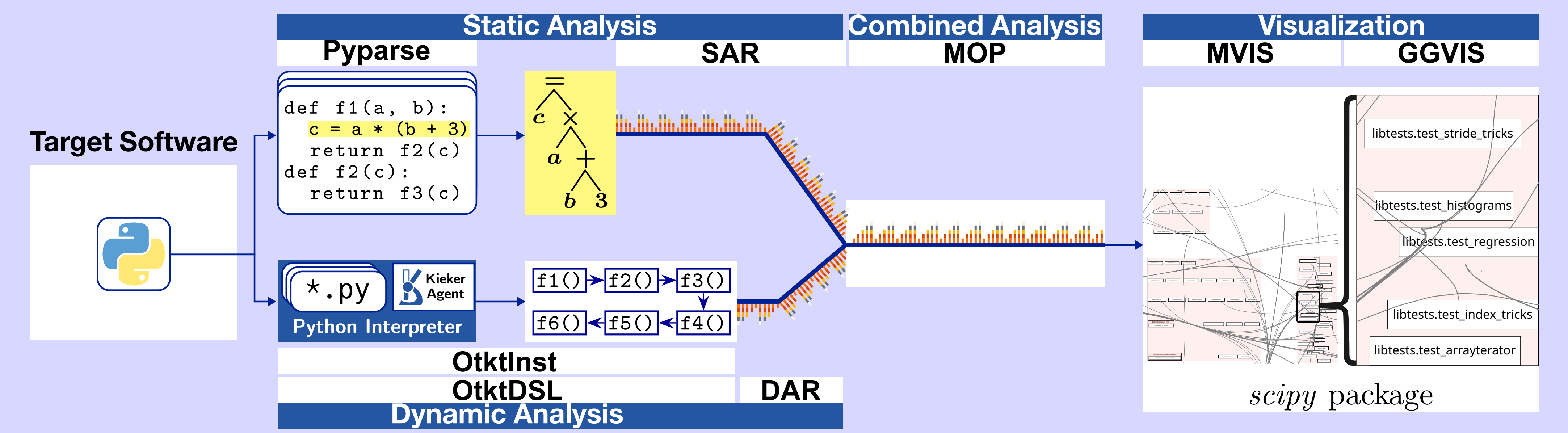


Combined Analysis of Python Software with Kieker

SustainKieker

Combined Analysis of Python Software with Kieker



Software Artifacts

Static Analysis	Dynamic Analysis
<ul style="list-style-type: none">Pyparse analyzes Python code and outputs AST (abstract syntax tree) information in a CSV format, consumable by the SAR tool https://github.com/kieker-monitoring/pyparseSAR (Static Architecture Recovery) SAR recovers architecture models based on the received AST description, generated by the Pyparse tool (1) SAR currently recognizes calls and data flow based on global variables (2) SAR also reads a list of operation calls, e.g., a subroutine calling another one, and a data access list from the received AST description https://github.com/kieker-monitoring/kieker/tree/main/tools/sar	<ul style="list-style-type: none">OtkDSL a domain-specific language, which describes a mapping from an OpenTelemetry span to a Kieker execution record https://github.com/kieker-monitoring/OtkDSLOtkInst automates instrumenting the target Python software; namely (1) decorating all Python functions and methods, and (2) importing the decorator from Otk's instrument module https://github.com/kieker-monitoring/OtkInstDAR (Dynamic Architecture Recovery) builds architecture models from the received Kieker records https://github.com/kieker-monitoring/kieker/tree/main/tools/dar

Combined Analysis: Static + Dynamic

<ul style="list-style-type: none">MOP (Model OPeration) merges models together from different sources or select a portion of the model. The tool support different merge approaches https://github.com/kieker-monitoring/kieker/tree/main/tools/mopMVIS (Model Visualization and Statistics Tool) generate graphics and apply metrics to architecture models, with selectors and metrics. It is useful to diff between revisions https://github.com/kieker-monitoring/kieker/tree/main/tools/mvis	<ul style="list-style-type: none">GGVIS (Grouped Graph Visualizer) uses the Tulip Framework to read graphics and renders nested graphs https://github.com/kieker-monitoring/GGVIS
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Replication Package

Zenodo: Dynamic and Static Analysis of Python Software Replication Package VM
<https://doi.org/10.5281/zenodo.16735613>