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Title: An Empirical Study on Static Analyzer Toolsets to Reduce False Positives, False Negatives in Python Type Checkers

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Abstract—Python's dominance in large-scale systems necessitates robust static type checkers like Mypy and Pyright. But as the language evolves, who verifies these tools? We introduce Pytifex, a framework that bridges the gap between theoretical fuzzing and real-world defects. Unlike random code generators, Pytifex mines and mutates closed GitHub issues to create targeted, adversarial test cases. This column details how data-driven differential testing reveals significant soundness gaps in major type checkers. We offer a roadmap for tool maintainers to use these refined examples to fortify the Python ecosystem against false diagnostics.

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