The future of typeshed

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What is typeshed?

- Repository of type stubs for Python libraries
- Both standard library and third-party
- Used by various type checkers (mypy, pytype, pyre, etc.)
- Started in 2015
- Maintained by mypy and pytype maintainers, Sebastian Rittau, and me
- Receives about 2 commits/day on average

Type coverage

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- Standard library coverage is pretty good
  - All commonly used modules are covered (>200 total)
  - Some more obscure ones aren't
- About 57 third-party libraries included
  - requests, click, boto, flask, …
  - But not numpy, django, SQLAlchemy, setuptools, boto3, …
- Tests
  - mypy and pytype read and validate the stubs
  - flake8-pyi (linter plugin) performs additional checks
  - No automated tests that stubs match the implementation

Problems with typeshed

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- Not enough stubs!
  - Many major Python packages remain untyped
  - Some require custom type system support (e.g., mypy plugins)
- No support for testing stubs
  - We just test that mypy and pytype accept the stubs
- How do we deal with library versioning?
  - Currently there's no good answer
- Long release cycle tied to type checkers
  - Type checkers vendor typeshed and only update it periodically
- Maybe too tied to mypy

A model: DefinitelyTyped

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https://github.com/DefinitelyTyped/DefinitelyTyped

- Typeshed equivalent for TypeScript (typed JavaScript)
- Contains types for ~5800 packages
- About 50 commits per day
- All are in a single repo, but:
  - Each package is published separately and automatically
  - Authors of stubs retain some ownership over the stub package
  - Supports package-specific strictness options

Ways forward

- Goal: Good type coverage for important libraries
- Encourage including stubs with packages
  - Pro: Package authors know their packages well
  - Con: Package authors may not be interested in maintaining types; hard to maintain quality
- Encourage separate stub packages
  - Pro: Easy to move quickly and release separately
  - Con: Discoverability is hard
- Find ways to encourage contributions (borrow from DefinitelyTyped?)

Questions?

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