Python & Rust: вместе веселей

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Who am I?

- 17 лет разработки на Python

- Server/Client

- Naumen Phone/Naumen Contact Center

- United Nations

- Spherical

Who are you?

- Python разработчик

- Проблемы производительности

- CPU-bound задачи

- Интерес к "импортным батарейкам"

What it is about?

- Когда Python действительно медленный?

- Что можно с этим поделать?

- Что за "ржавчина" такая?

- Причём тут Python?

- Реальный пример из жизни

Slow Python

- CPU bound задачи

- Single Core Performance

- Multi Core + Threading

- GIL

Investigate

- Running process debug

  - aioconsole

  - remote-pdb

- Profiling

  - profile/cProfile (deterministic)

  - py-spy (sampling)

Choose

- multiprocessing

- Tasks offloading (например, Celery)

- (not yet here, 3.9) sub interpreters, PEP-0554

- C extensions

  - Cython

  - API/ctypes/CFFI//Boost.Python/SWIG/SIP/PyBindGen/pybind11

  - Rust

Rust.WTF

- Graydon Hoare, 2006

- Mozilla, 2010

- Firefox, 6.3%

- find=>fd, grep=>ripgrep

Rust.Intro

- C/C++ style syntax

- Performance/Reliability/Productivity

- Memory safety without garbage collection

  - RAII

  - Ownership

  - Lifetimes

- Abstraction without overhead

Rust.Ecosystem

- rustup

- cargo

- crates.io (🔋🔋🔋🔋)

Rust & Python

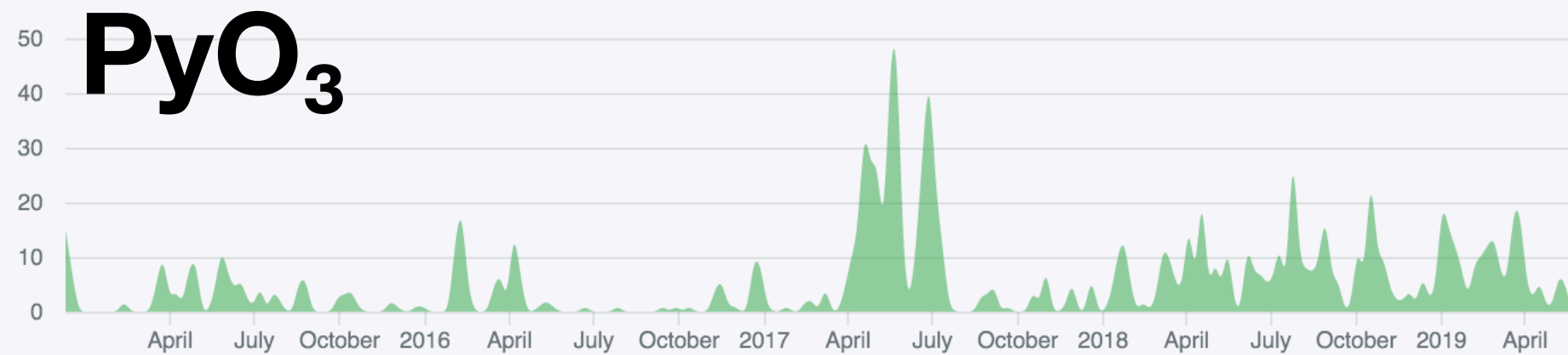- ffi/python-sys

- PyO3/rust-cpython

- RustPython

Integration ways

- Embedding

- Extending

Why PyO₃?

- Unobtrusive syntax (proc macro instead of DSL)

- Objects ownership and structure

- Error handling

- pyo3-pack

- rust-cpython looks stalled

Why PyO₃?

PyO$_3$ problems

- Lots of bugs

- Not working on stable rust

Let me see the code

Cheatsheet

- rustup

- cargo generate --git <repo>

  - github.com/apatrushev/pyo3-pycon

- pip install pyo3-pack

- pyo3-pack

  - develop

  - build => wheel

Production

- Spherical

- Desktop App

- Very large XML (700mb)

  - 60–80mb actual interesting data size

- lxml

Production result

- quick-xml

- 2 weeks

- 10x speedup

break

Thank you. Questions?

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