

Python vs Rust...

(for simulation)

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ML Engineer at FREE NOW (former mytaxi)

Repo:

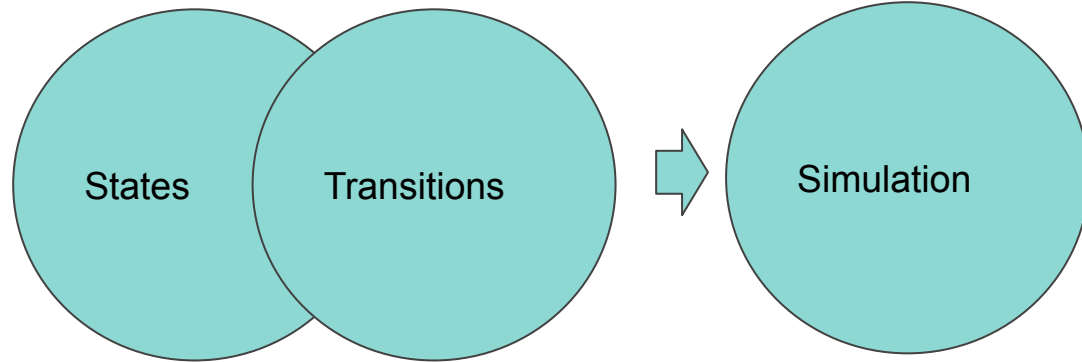
https://github.com/Alisa-lisa/conferences/tree/master/EP_2019



What is Simulation?



Approximate imitation



Types



Continuous

- Physics
- Biology
- Chemistry
- Advanced engineering systems

Discrete-event

- Taxi
- Post Office
- Manufacturing pipeline
- Network protocols

Mixed

- Forestry
- Health care
- Higher complexity systems

Tools

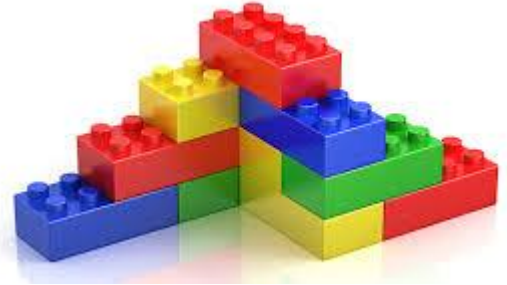


- Frameworks (GUST)
- Libraries (SimPy)
- Game Engines (Unity)
- Programming languages

Important points



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Scenario



- Spawn $0..N$ taxi requests with P chance
- Request can be assigned to a FREE car only
- Request gets cancelled after X seconds, if not assigned
- Cars are either FREE or OCCUPIED
- 1 day of simulation

Criteria



Objective:

- Amount of code
- Testing simplicity
- Documentation generation (API or usage manual)
- Performance
- Memory usage
- Ecosystem
- Language versions (Major updates, breaking changes, etc.)

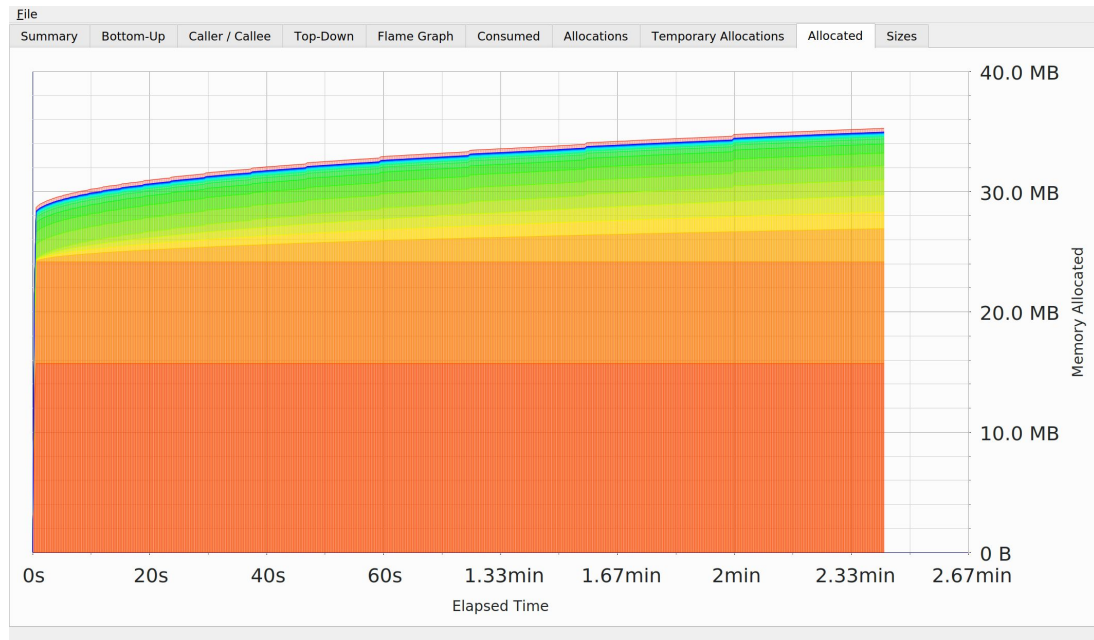
Subjective:

- Code simplicity
- Development speed

Python



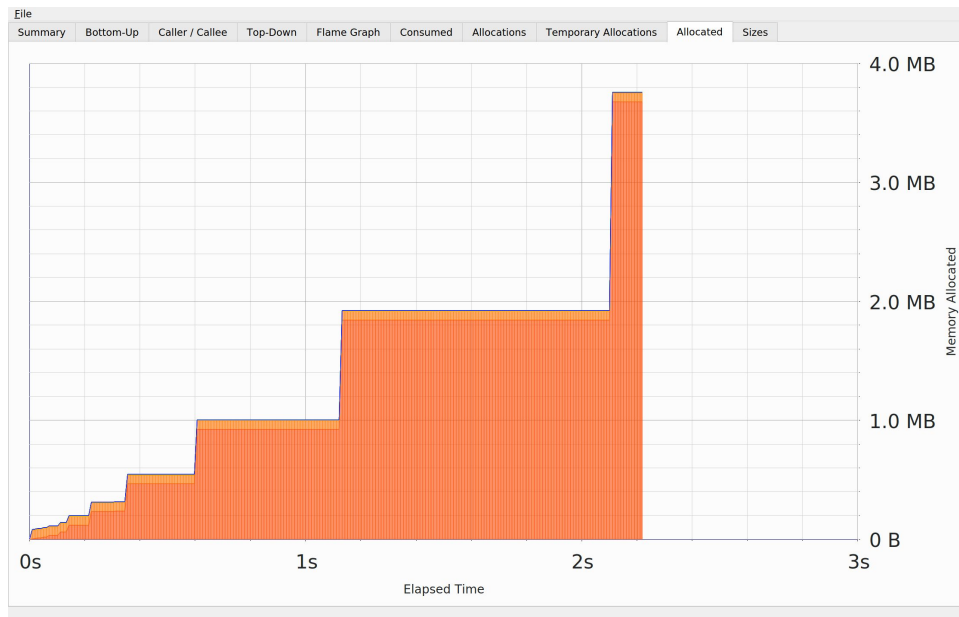
- Lines: 94,
- Performance: 209.036s+-16.96s
- Memory usage:



Rust



- Lines: 160
- Performance: 154.5ms +- 4.4ms
- Memory usage:



Comparison



criteria	Python	Rust
Amount of code		
Test Simplicity		
Documentation		
Memory efficiency		
Performance		
Ecosystem		
Versions		
Simplicity		
Development speed		

Conclusion



What do you want to reach and what are your pain points?