

Why I like Julia

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Remote Sensing Centre for
Earth Systems Research



UNIVERSITÄT
LEIPZIG

Main points

Expressive

Written in Julia

Fast

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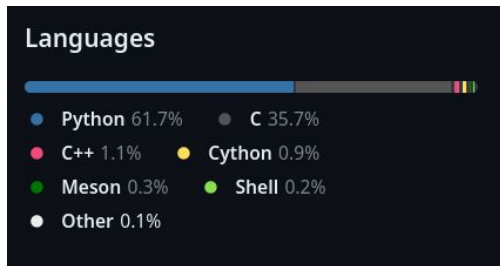
$$\begin{aligned}\dot{x} &= \sigma(y - x) \\ \dot{y} &= x(\rho - z) - y \\ \dot{z} &= xy - \beta z\end{aligned}$$

```
function lorenz_rule(u, p, t)
    σ, ρ, β = p
    x, y, z = u
    dx = σ(y - x)
    dy = x(ρ - z) - y
    dz = x*y - βz
    return dx, dy, dz
end
```

Main points

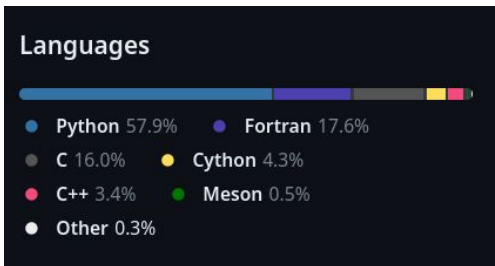
Expressive

Numpy



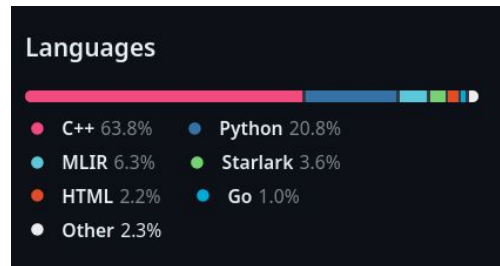
Written in Julia

Scipy

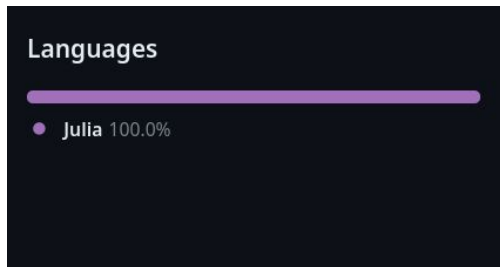


Fast

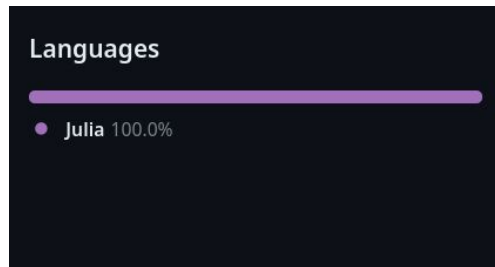
Tensorflow



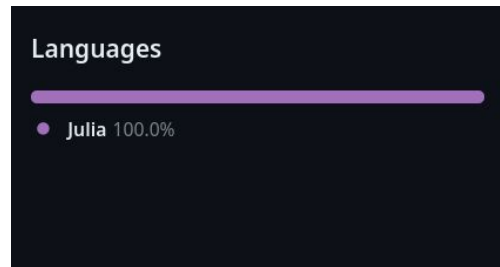
DataFrames.jl



DifferentialEquations.jl



Flux.jl

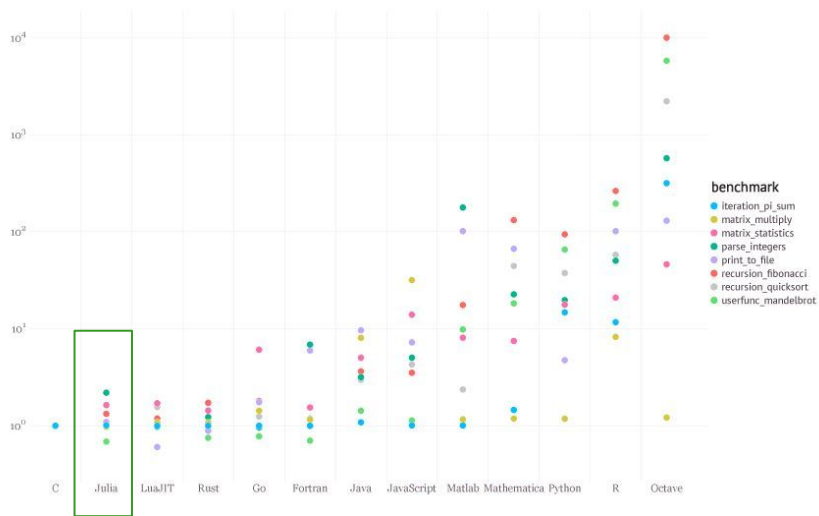


Main points

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Input table: 1,000,000,000 rows x 9 columns (50 GB)

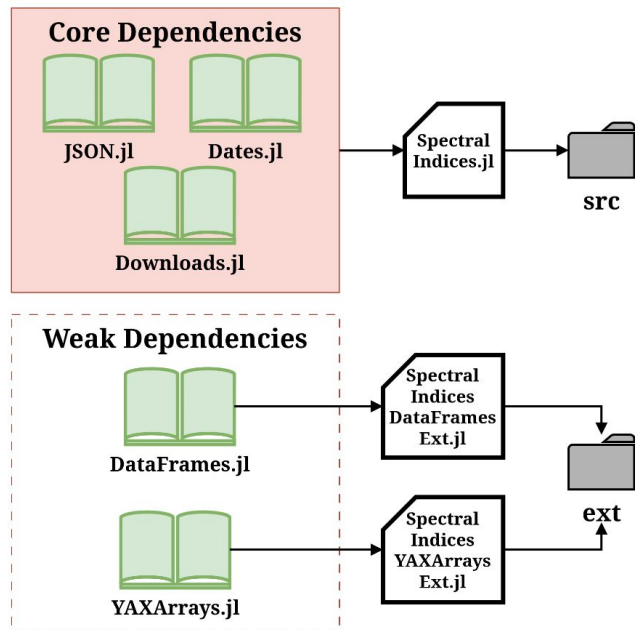
Polars	0.8.8	2021-06-30	143s
data.table	1.14.1	2021-06-30	155s
DataFrames.jl	1.1.1	2021-05-15	200s
ClickHouse	21.3.2.5	2021-05-12	256s
cuDF*	0.19.2	2021-05-31	492s
spark	3.1.2	2021-05-31	568s
(py)datatable	1.0.0a0	2021-06-30	730s
dplyr	1.0.7	2021-06-20	internal error
pandas	1.2.5	2021-06-30	out of memory
dask	2021.04.1	2021-05-09	out of memory
Arrow	4.0.1	2021-05-31	internal error
DuckDB*	0.2.7	2021-06-15	out of memory
Modin		see README	pending

Package manager

Built-in

- Stand alone projects
- No global breakages
- Easy and understandable

Modular



My main point: Community

- Official website: <https://julialang.org/>
- Official documentation: <https://docs.julialang.org/en/v1/>
- Forum:
 - Discourse: <https://discourse.julialang.org/>
 - Reddit: <https://www.reddit.com/r/Julia/>
- Chat:
 - Slack: <https://julialang.org/slack/>
 - Zulip: <https://julialang.zulipchat.com/register/>
 - Discord: <https://discord.gg/mm2kYjB>
- Source Code: <https://github.com/JuliaLang/julia>

My main point: Community

No (personal) interaction



Immediate and tailored reply



Julia: cons

- Very young
 - First public release in 2012
 - Stable v1.0 release in 2018
- Not (yet) suitable for non-computing web apps
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	Total Through Jan 2016	Total Through Jan 2023	Growth
Julia Downloads	346,000	45,127,054	130x
GitHub Stars - Julia + Julia Packages	18,882	363,329	19x
Julia Registered Packages	690	8,748	13x
Julia Citations: A Fast Dynamic Language for Technical Computing (2012), Julia: A Fresh Approach to Numerical Computing (2017) and Julia: Dynamism and Performance Reconciled by Design (2018)	143	5,118	36x
Julia News Mentions	14	1,137	88x
Julia Discourse Views	329,918 (Jan 2017)	80,870,518	245x
Julia Language YouTube Channel Views	183,290	6,208,427	34x
Julia Language YouTube Channel Subscribers	2,495	73,618	30x



Jeff Bezanson
@JeffBezanson

Time to first plot in [#JuliaLang](#):
v1.8: 5.9 seconds
v1.9: 0.56 seconds
2023 already shaping up nicely...

Thank you!

Francesco Martinuzzi