Python vs Julia : a case in medical imaging

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Twitter: @jdatascientist
Github: bit.ly/Julia_vs_Python

Resources

If you have Julia installed:

- Github Repository: bit.ly/Julia_vs_Python

If you don't have Julia installed:

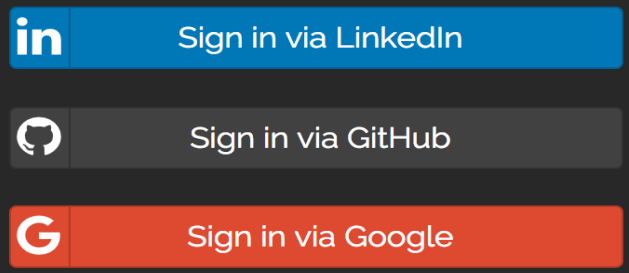
JuliaBox beta

Run Julia from the Browser. No setup.

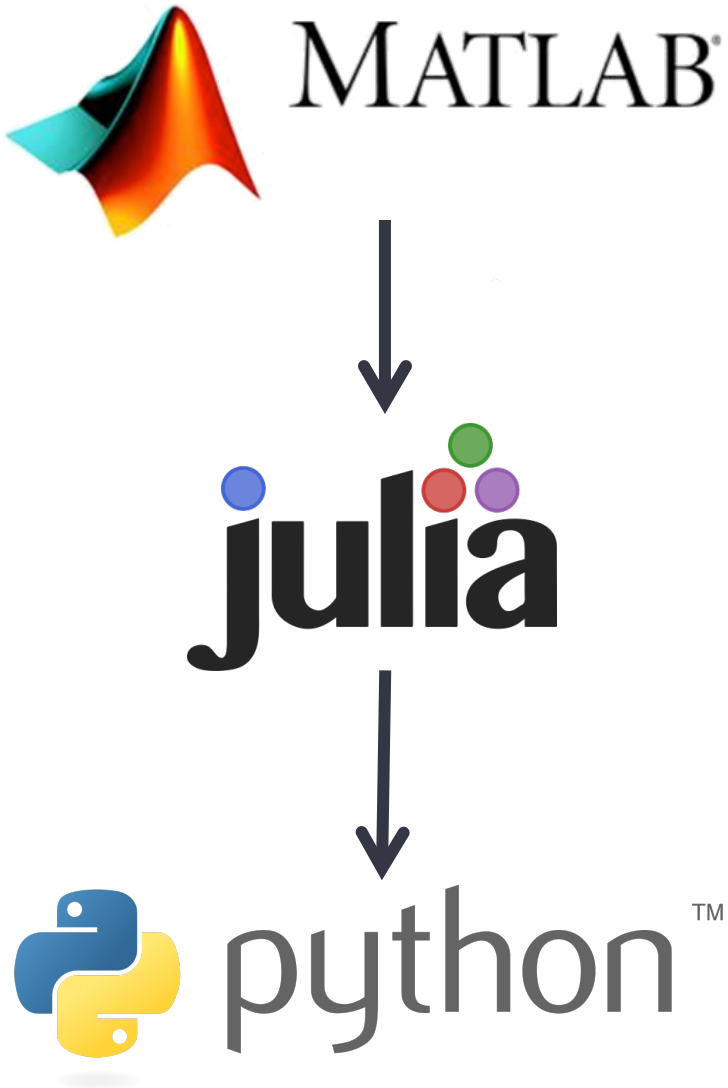
www.juliabox.com

The Julia community is doing amazing things.

We want you in on it!



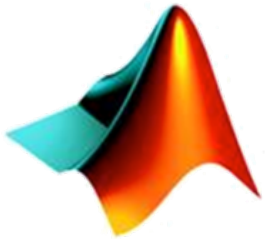
My migrating route



Why did I **decide** to stop using Matlab?

1. Speed → MATLAB was slow
2. Cost → MATLAB is very expensive

but I was not aware of many other issues
(I will tell you about it later)

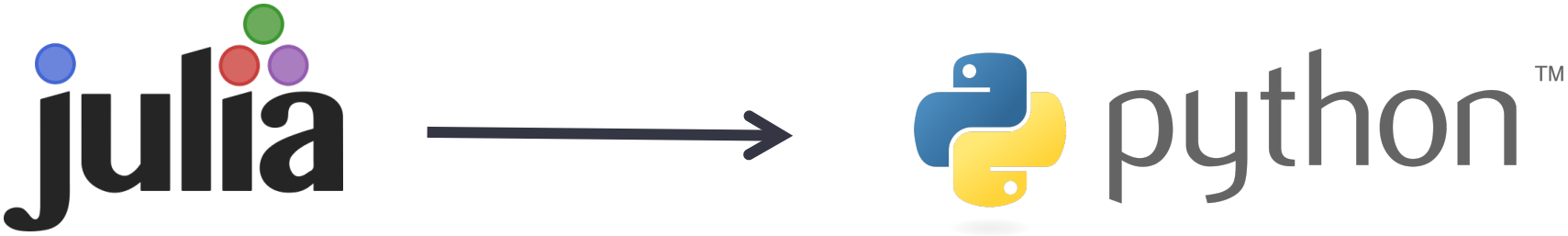


MATLAB

julia

Why did I **stay away** from Matlab?

1. Speed → MATLAB is slower
2. Cost → MATLAB is very expensive
3. Deployment → MATLAB is hard to scale
4. Community → go beyond academia
5. Way easier to program in Python and Julia !!:



What is great about Julia ?

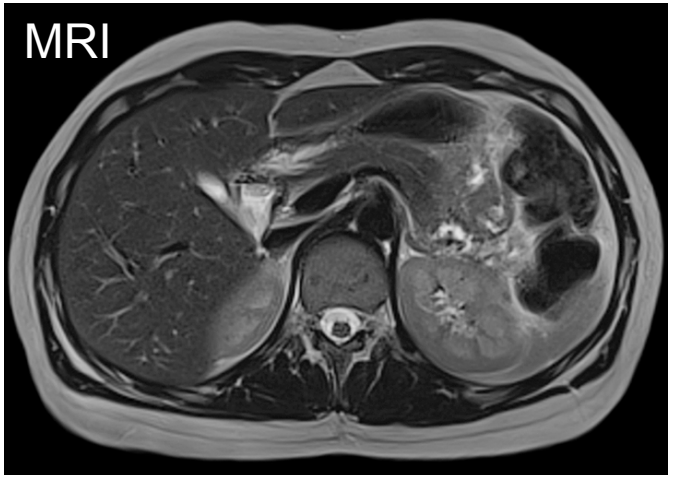
1. General purpose programming language
2. Designed for scientific computing
3. Aims to solve the two language issue
4. Just-in-time compiling
5. Great Packaging system
6. Call C / C++ directly
7. Call Python directly
8. Metaprogramming
9. Multiple Dispatch

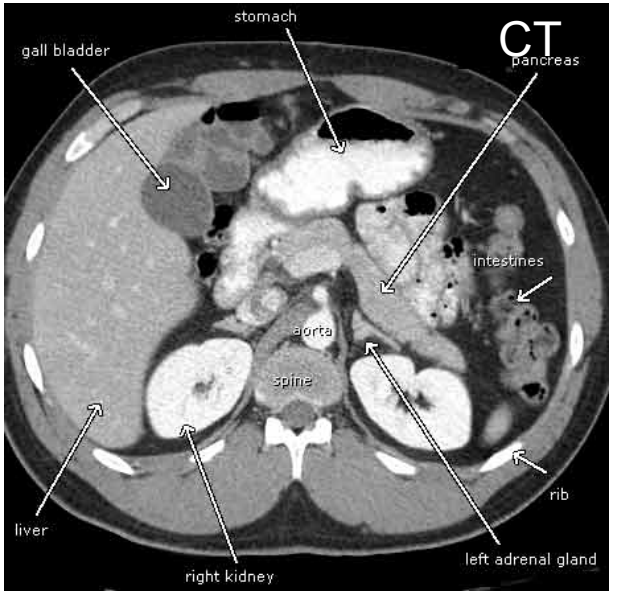
What is great about Python ?

1. General purpose programming language
2. Excellent data wrangling and deployment
3. Huge ecosystem of packages and users
4. *Lingua franca* of data science (along with R)
5. Way better than Julia for non-scientific computing

Two-page primer in medical imaging

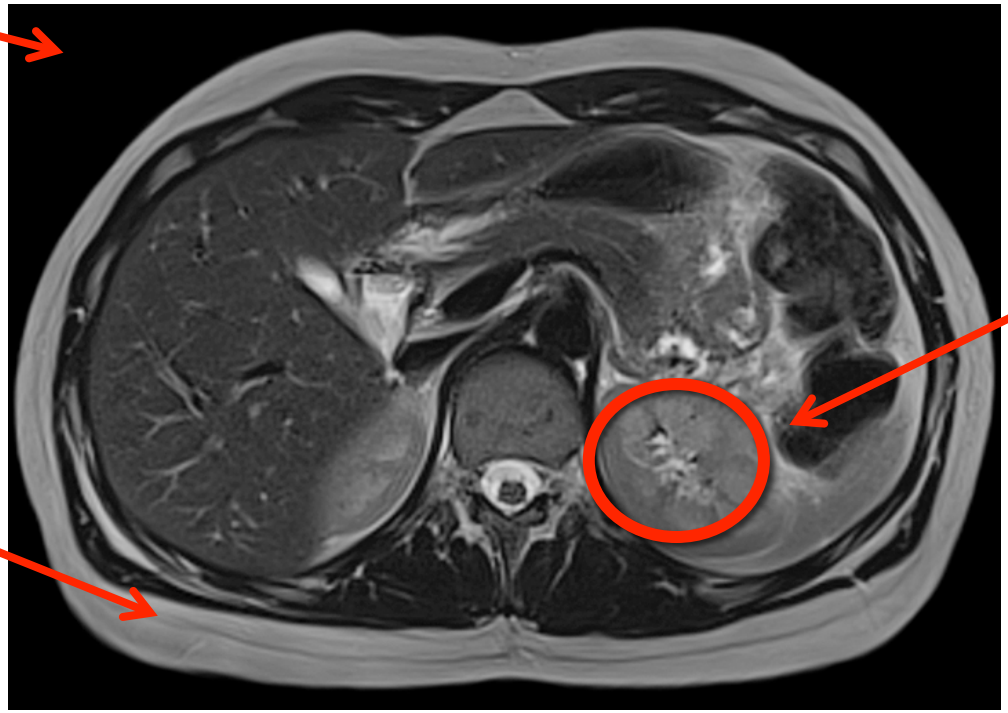
1. Qualitative in nature
2. It takes a lot of effort to make imaging quantitative: Linear and non-linear regression, simulations
3. Not all data points are import
4. Very high dimensionality data
5. Lots of memory needed





Two-page primer in medical imaging

Not all data are create equal



Not all data are create equal

Programing / Data Analysis skills needed in medical imaging

1. Matrix / vector creation, slicing, manipulation
2. Conditional statements (for, if, while, etc)
3. Plotting
4. Logical indexing
5. Use and create functions
6. Linear regression
7. Non-linear regression

Check Julia and Python notebooks

OR

Type at juliabox.com

How does the performance of Julia compares to Python?

1. Matrix / vector creation, slicing, manipulation
2. Conditional statements (for, if, while, etc)
3. Plotting
4. Logical indexing
5. Use and create functions
6. Linear regression
7. Non-linear regression

Check notebooks Julia and Python notebooks