FINC-672 – WORKSHOP IN FINANCE: EMPIRICAL RESEARCH
Overview of the Julia Programming Language

PROF. MATT FLECKENSTEIN
UNIVERSITY OF DELAWARE

mflecken@udel.edu

Goals

☐ Get a sense of what the Julia Programming language is, its origins and design, and how it is used in the financial industry.

The Julia Programming Language

- The Julia programming language is a relatively new language, first released in 2012 and aims to be **both easy and fast**.[1]
- It "runs like C but reads like Python."[2]
- It was made for scientific computing, capable of handling *large amounts of data and computation* while still being fairly *easy to manipulate, create and protype code.*

[1] Jeff Bezanson et al. "Julia: A Fresh Approach to Numerical Computing". In: *SIAM review* 59.1 (2017), pp. 65–98.

[2] Jeffrey M. Perkel. "Julia: Come for the Syntax, Stay for the Speed". en. In: *Nature* 572.7767 (July 2019), pp. 141–142.

The Julia Programming Language (cont'd)

- The creators of Julia explained why they created Julia in a ▸ 2012 blogpost.

  We are greedy: we want more. We want a language thats open source, with a liberal license. We want the speed of C with the dynamism of Ruby. We want a language thats homoiconic, with true macros like Lisp, but with obvious, familiar mathematical notation like Matlab. We want something as usable for general programming as Python, as easy for statistics as R, as natural for string processing as Perl, as powerful for linear algebra as Matlab, as good at gluing programs together as the shell. Something that is dirt simple to learn, yet keeps the most serious hackers happy. We want it interactive and we want it compiled.
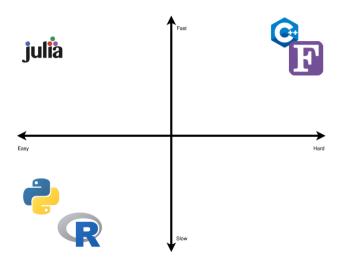
The Julia Programming Language (cont'd)

- Most users are attracted to Julia because of the **superior speed**.[3]
- After all, Julia is a member of a prestigious and exclusive club.
- The **petaflop club** is comprised of languages who can exceed speeds of **one petaflop per second at peak performance**.[4]
- Currently only C, C++, Fortran and Julia belong to the *petaflop club*.
- You can find benchmarks for Julia and several other languages ▸ here .

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[3]If you like to learn more about how Julia is designed, you should definitely check Bezanson et al., "Julia: A Fresh Approach to Numerical Computing".

[4]A petaflop is one thousand trillion, or one quadrillion, operations per second.

Julia Versus Other Programming Languages

WHY JULIA?

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References

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Perkel, Jeffrey M. "Julia: Come for the Syntax, Stay for the Speed". en. In: *Nature* 572.7767 (July 2019), pp. 141–142. DOI: 10.1038/d41586-019-02310-3.