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# History

- Created by Jeff Bezanson, Stefan Karpinski, Viral B. Shah, and Alan Edelman
- Launched in 2012
- Developed at MIT
- Today, it has been downloaded by users at more than 10,000 companies and 1,500 universities (JuliaComputing)

# What is Julia?

- General Purpose Language
- New High Level Dynamic Programming Language
- Designed for Numerical Analysis and Computational Science
- Stems from Various Low Level and High Level Languages
  - C, Python, R, MATLAB
- Free and Open Source



# Why is Julia Popular?

- Combines the syntax of scripting languages like Python, MATLAB, R with the speed of compiled languages like C
- Compiled at run time (Just In Time for Execution)
- Simple Syntax
- Can call libraries from C, Python, and Fortran
- Specifically designed for machine learning and linear algebra

# How It Has Helped

- Michael Stump , a systems biologist researcher at the University of Melbourne, saw an 800 fold time improvement after rewriting his computational models from R to Julia (Perkel)
- Jane Herriman, a materials science researcher at Caltech, had tenfold faster runs after rewriting her code from Python to Julia (Perkel)
- “You can do things in an hour that would otherwise take weeks or months”, says Michael Stump, a systems biologist at the University of Melbourne (Perkel)

# Agenda(Jupyter Notebook)

- Basics of Julia
  - Operators
  - Variables
  - Strings
  - Data Structures (arrays, dictionaries, tuples)
  - Looping and Conditionals
  - Data Frames
  - Files
- Example and demo
  - Plotting
  - Decision Tree / Random Forests
  - Image Segmentation

# Citations

Perkel, J. M. (2019, July 30). *Julia: Come for the syntax, stay for the speed*. Nature News. Retrieved November 14, 2021, from <https://www.nature.com/articles/d41586-019-02310-3>.

Karpinski and Bezanson, S. and J. (n.d.). *Why we created julia*. The Julia Programming Language. Retrieved November 14, 2021, from <https://julialang.org/blog/2012/02/why-we-created-julia/>.

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