Teaching and Learning with Go:
The Northwestern Experience

Thomas W. Miller, MSDS Faculty Director

Lightning Talk at GopherCon 2023

Current Technology in Data Science

Python is #1

R is not going away

GopherCon 2021 Lightning Talk

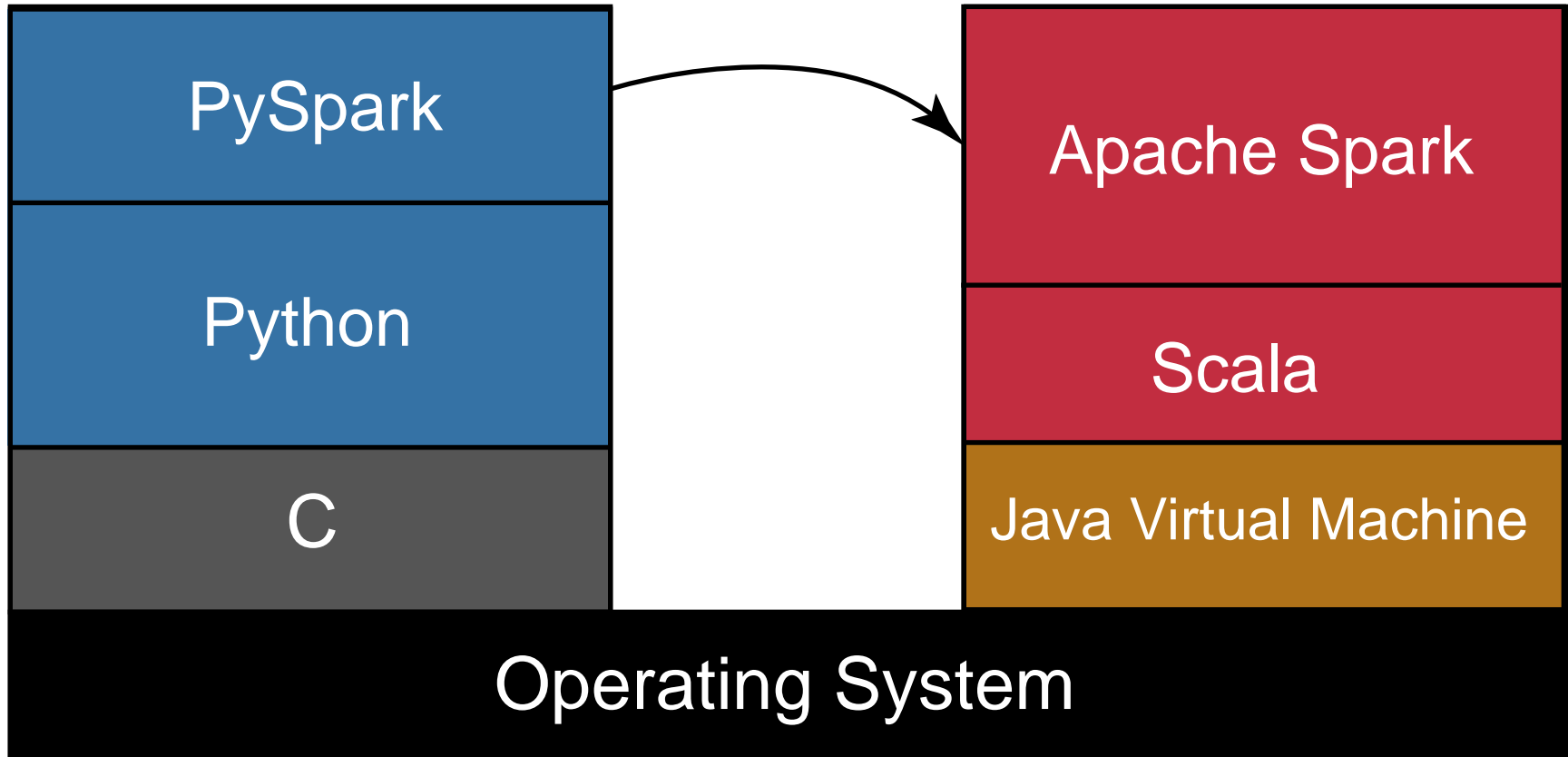Organizations need data science, and data science needs Go.

Advantages of Go:
- Go is machine efficient
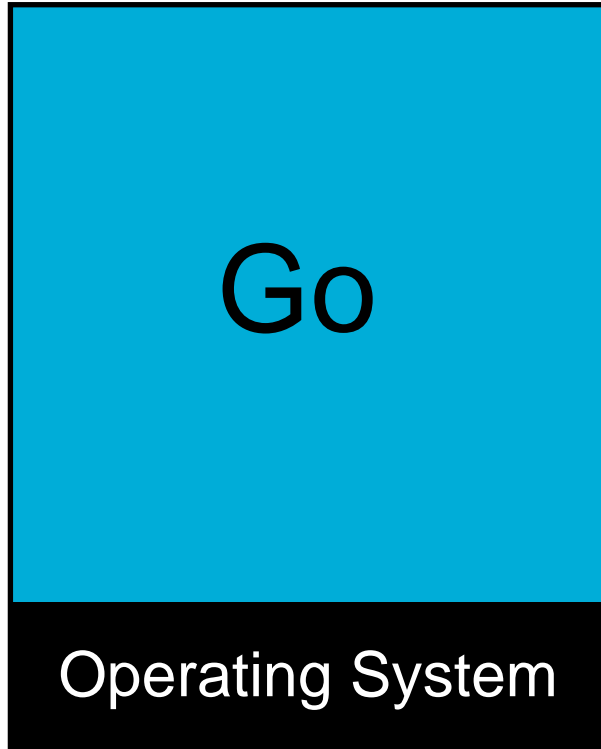- Go is programmer efficient
- Go simplifies the software stack

Tom Miller

Complex Software Stack for Data Science

Go Software Stack for Data Science

Go

Operating System

Analytics and models in Go
Application servers in Go
Web servers in Go
Microservices in Go
Containers in Go
Cloud computing in Go
Go compiler in Go

What does data science need?

Scientific method
Representative samples
Data frames
Efficient algorithms
Machine learning and intelligence
Databases, knowledge bases
Openness to new technologies

MSDS 431 Data Engineering with Go

This comprehensive introduction to the Go programming language reviews data structures and algorithms, the Go standard library, and packages for communications, database access, analytics, and modeling. Students learn how to work within the Go programming environment, employing best practices in software engineering. They design, develop, and test programs for data science.They implement database servers and clients. And they learn how to run concurrent processes, as needed in distributed and parallel processing environments. Prerequisites: None.

Go as a First Computer Language

Simplicity (25 keywords)
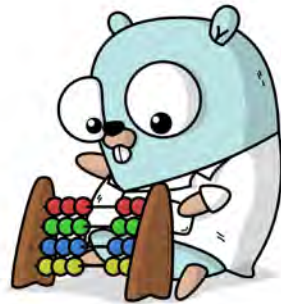
Standard structure of idiomatic Go

Best practices in software engineering

Facility with the command line

Explore various programming styles:

    Object-oriented, functional . . .

Systems and application programming

Learning Go for Data Science

Gopher with abacus by Marcus Olsson

https://msdsgo.netlify.app

Courses with Go as the Primary Language

MSDS 431 Data Engineering with Go

MSDS 432 Foundations of Data Engineering

MSDS 434 Analytics Application Engineering

MSDS 436 Analytics Systems Engineering

MSDS 459 Knowledge Engineering

MSDS 498 Capstone for Data Engineering

Master of Science in Data Science (MSDS)

https://msds-program.netlify.app

DATA SCIENCE
QUARTERLY

Following the data, leading with science

Data Science Quarterly promotes the discipline of data science, showing its relevance to all organizations and to social and political discourse. Data Science Quarterly combines the best attributes of academic journals and popular news magazines. Its articles draw on high-quality empirical research written in clear and concise language that anyone can understand.

https://www.data-science-quarterly.com

Announcing at GopherCon 2023

Public repositories
Multilingual: Go, R, Python . . .
Case studies
Data sets
Performance benchmarks
Resource requirements
Contributions from the Go and
    data science communities

https://github.com/data-science-quarterly

Thanks GopherCon 2023 and the Go Community Worldwide

https://msdsgo.netlify.app
https://msds-program.netlify.app
https://www.data-science-quarterly.com
https://github.com/data-science-quarterly