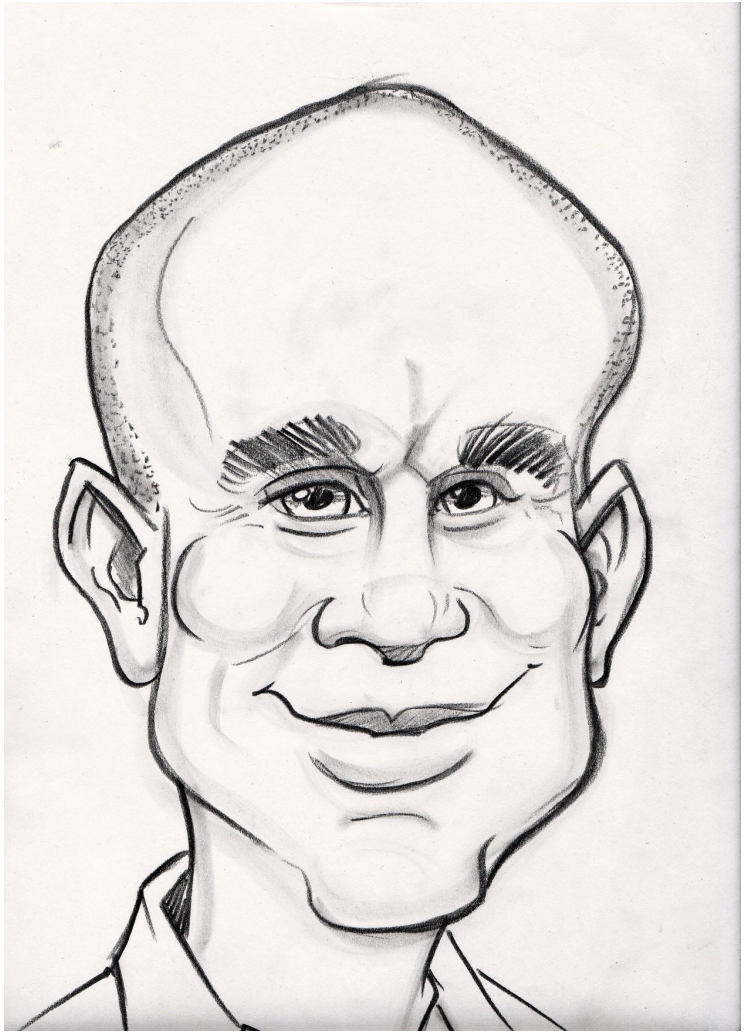
in memory
with 0 Serialization and ε Memory

# Miki Tebeka



CEO, CTO, UFO ...

**353solutions**

WHY?
memegenerator.net

# How many times do I have to tell you? The right tool for the right job!

Lt. Commander Montgomery Scott

# RPC

# Glue Language

Duct tape is like the force. It has a light side, and a dark side, and it holds the universe together.

— Carl Zwanzig

https://numpy.org/doc/stable/user/c-info.python-as-glue.html

# CPython

# Preconditions

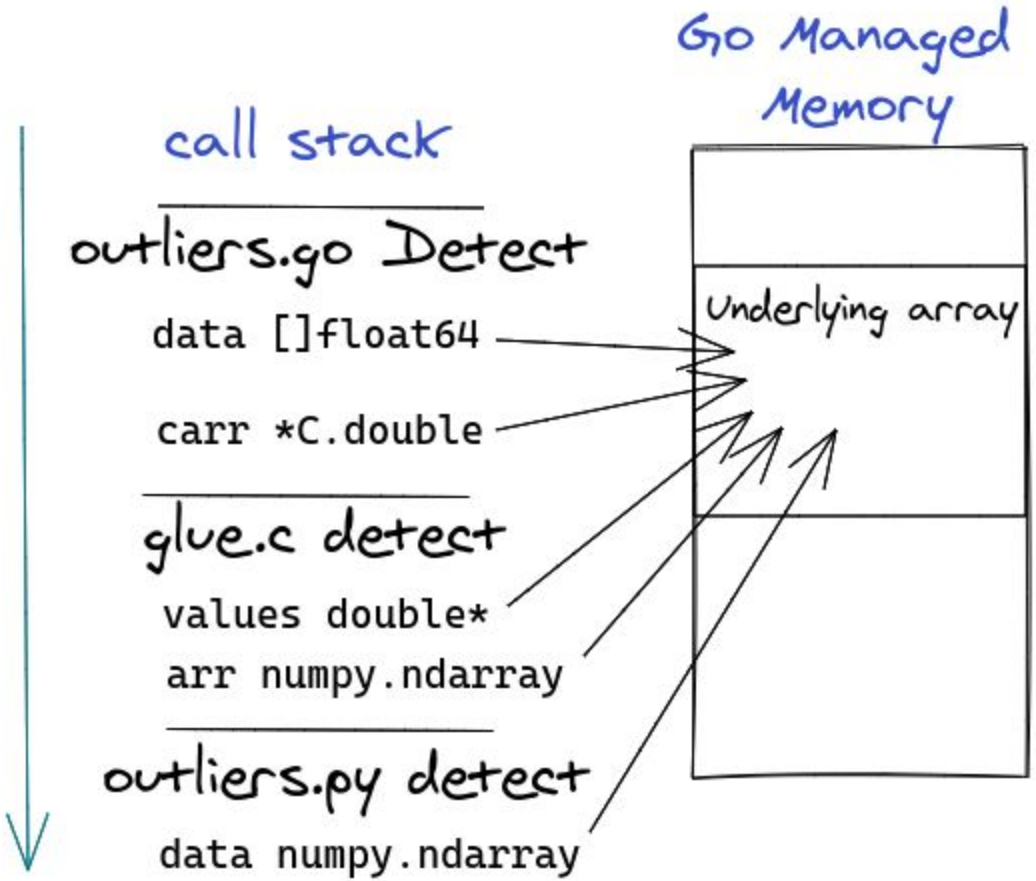
- Go's `float64` & numpy's `float` have the same representation in memory
- numpy arrays are contiguous in memory

# Setup

- Initialize Python
- Initialize numpy
- Load Module
- Get pointer to function

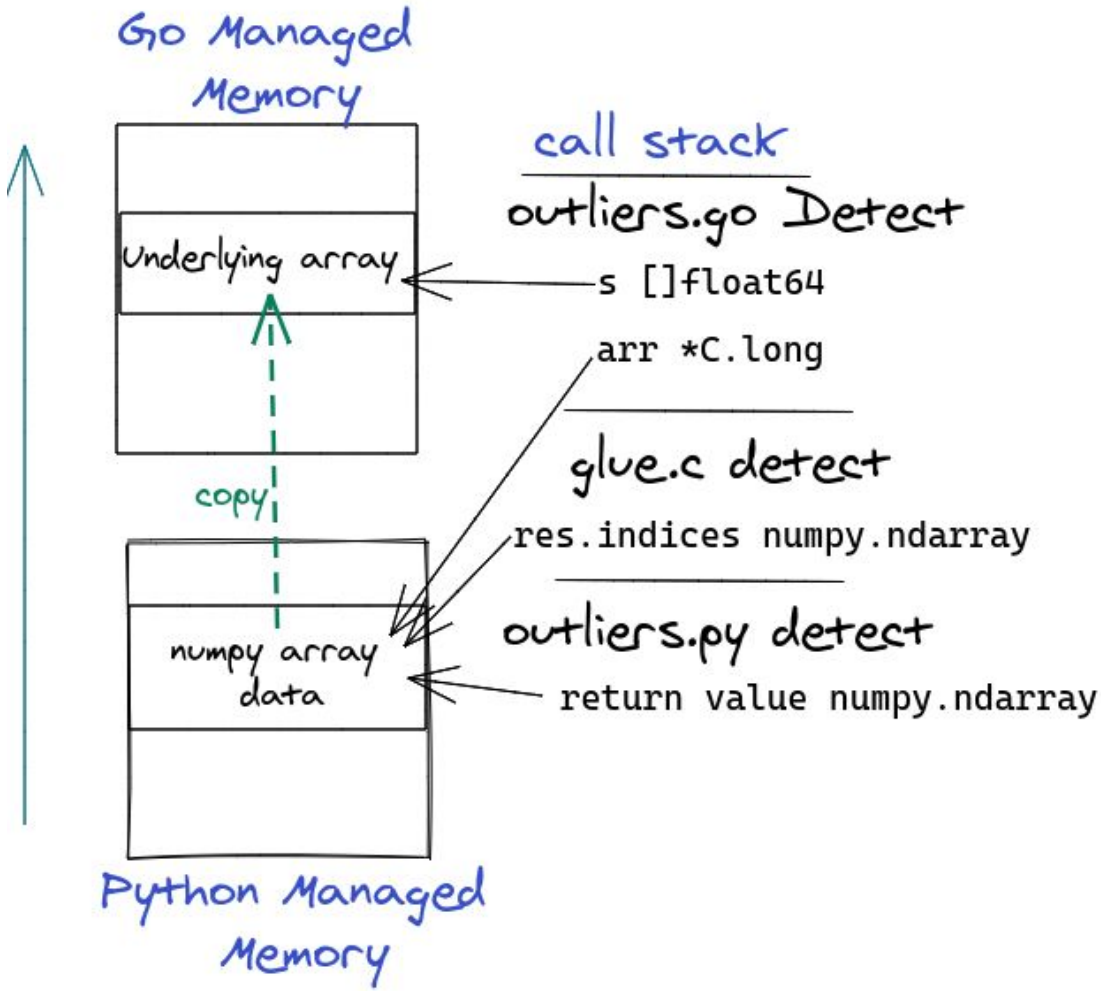
Going

Down


Go Managed Memory
call stack
outliers.go Detect
data []float64
carr *C.double
Underlying array
glue.c detect
values double*
arr numpy.ndarray
outliers.py detect
data numpy.ndarray

Up

Going


Go Managed Memory
call stack
outliers.go Detect
Underlying array
s []float64
arr *C.long
glue.c detect
copy
res.indices numpy.ndarray
outliers.py detect
numpy array data
return value numpy.ndarray
Python Managed Memory

# Building

# What’s Left?

- Goroutine/thread safety (GIL)
- Better error recovery
- Memory leaks?
- …

# Thank You!

https://www.ardanlabs.com/blog/2020/09/using-python-memory.html
https://poweruser.blog/embedding-python-in-go-338c0399f3d5
#darkarts on https://gophers.slack.com/
https://github.com/tebeka/talks/tree/master/embed-py-fosdem