# Automated Benchmarking of Container Applications

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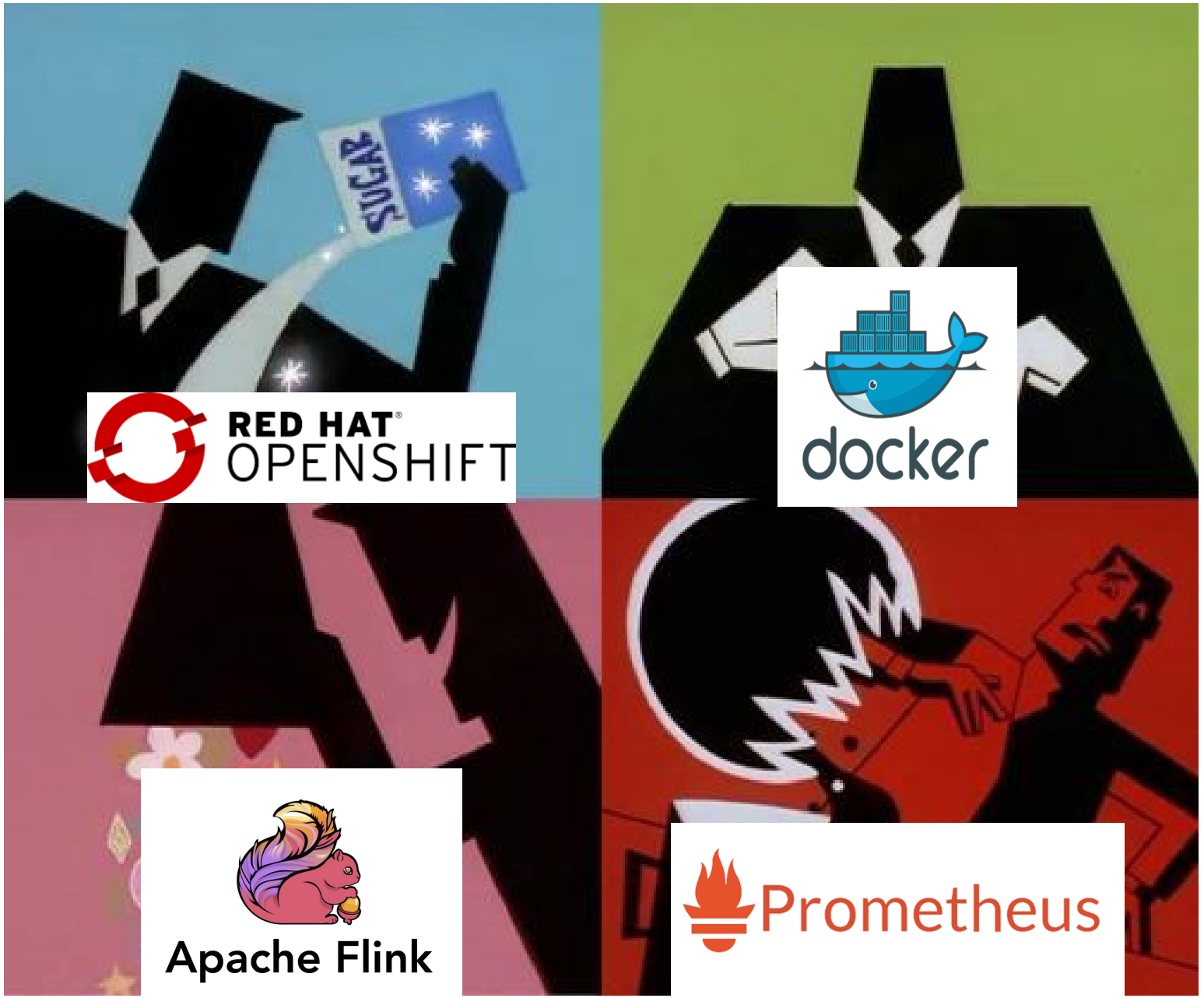
# Introduction

- What resources does my application need?
- What if the workload increases?
- What if I add extra features to my software?

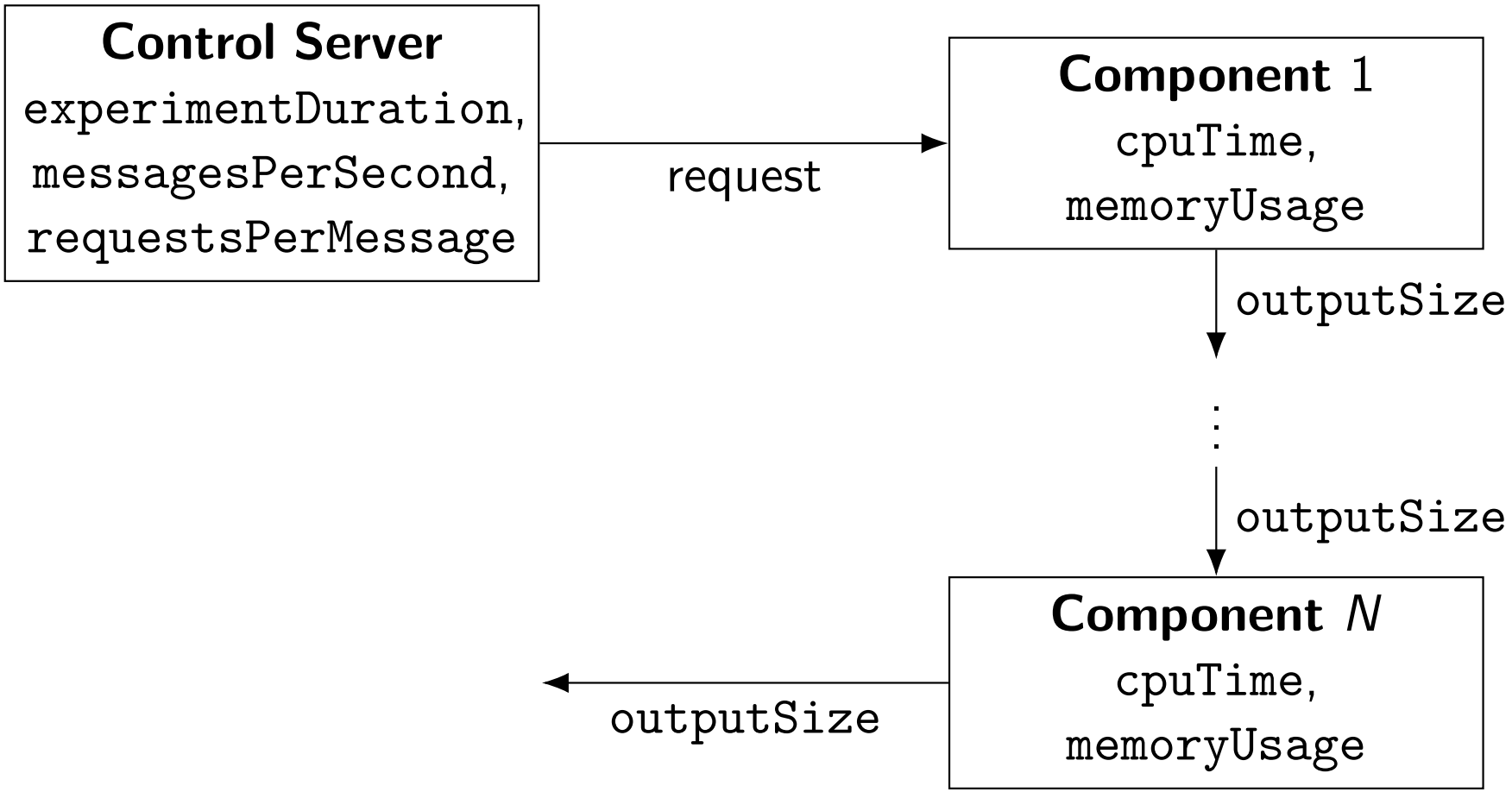
## In this talk...

- A simulator for a wide range of distributed applications
  - with configurable memory usage, running time, etc.
- Recording & plotting various performance metrics
- Ensuring accurate simulations locally and on a cloud

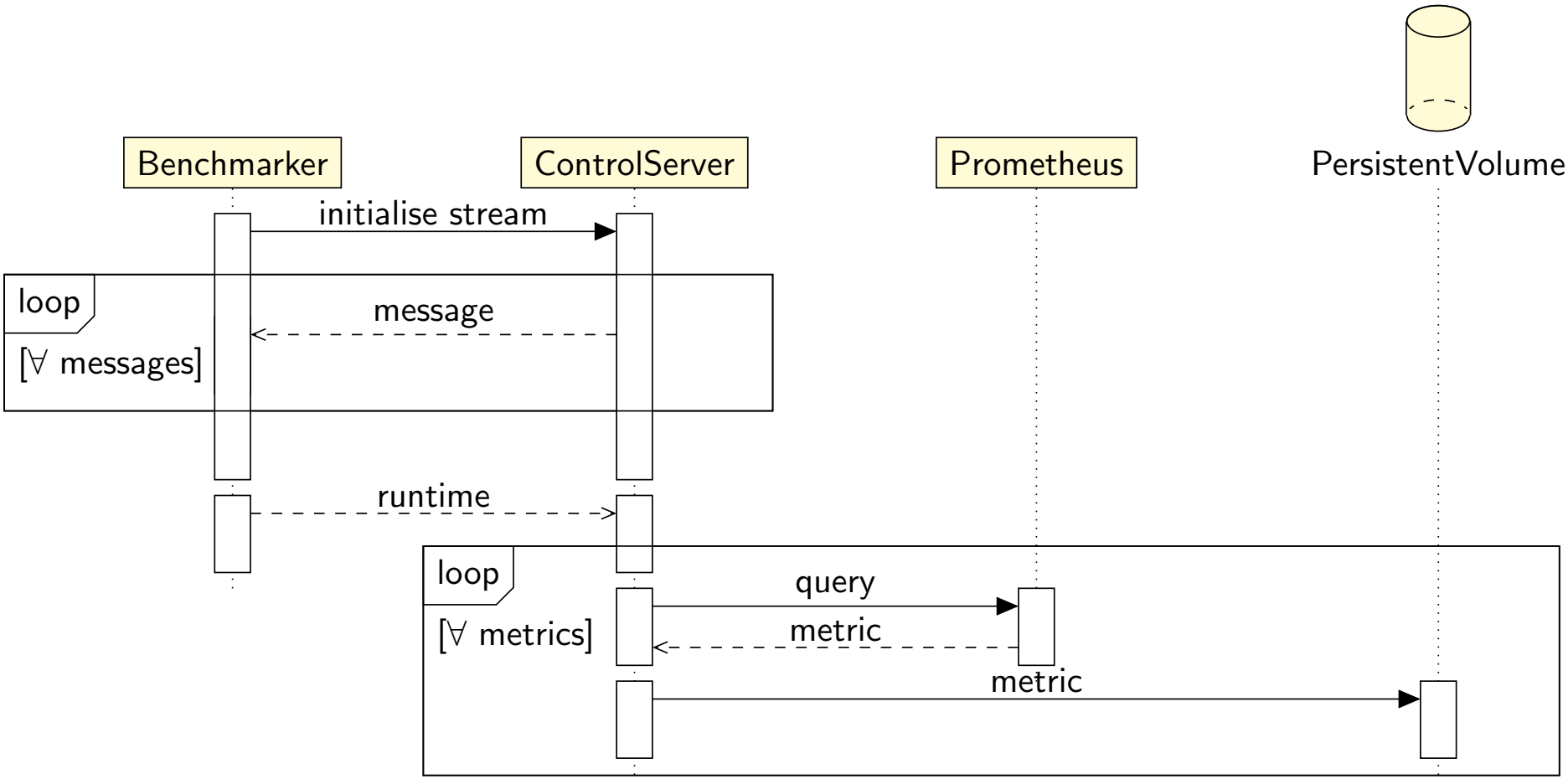
# Main Ingredients



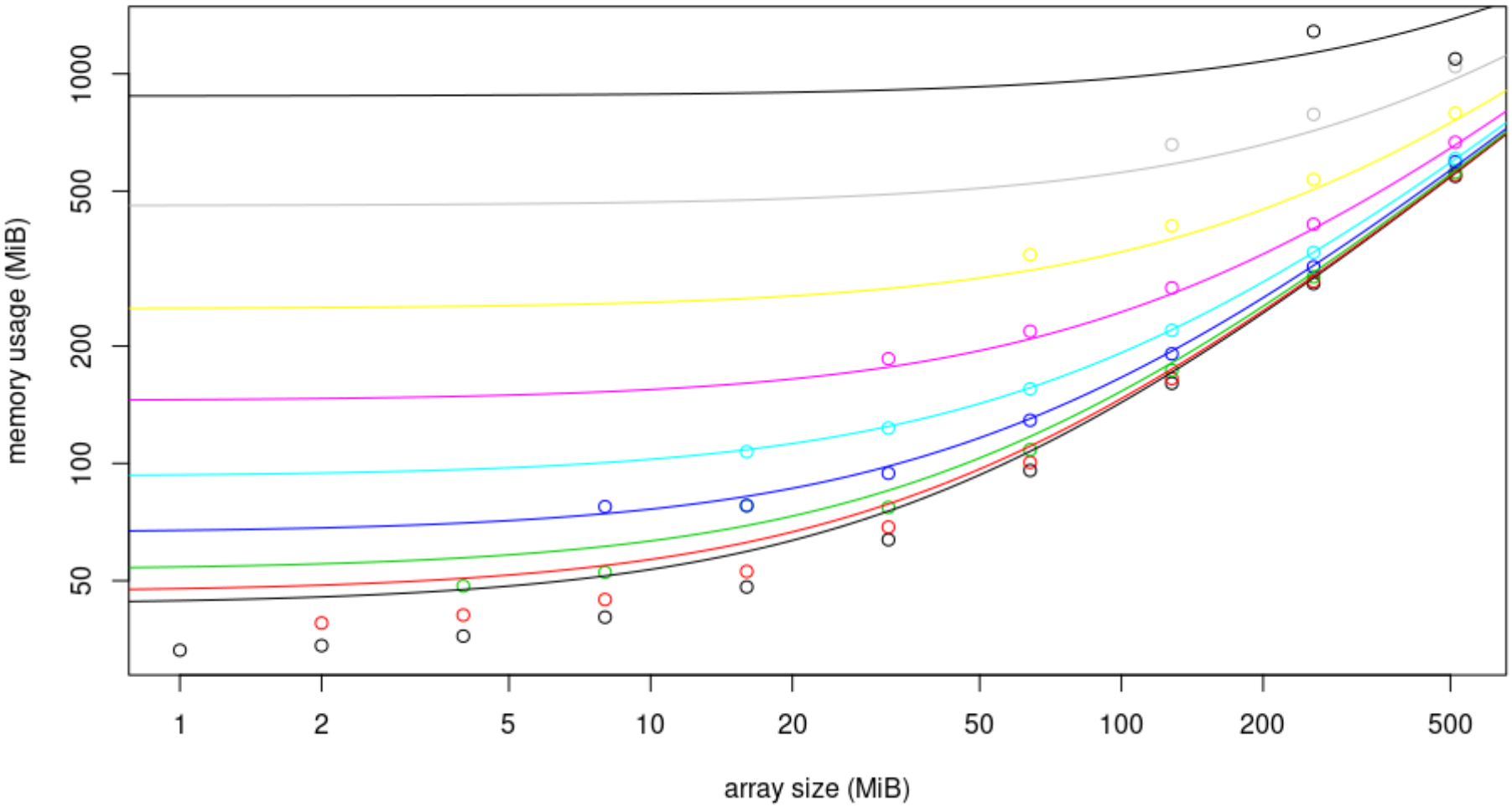
# Simulation


Control Server
experimentDuration,
messagesPerSecond,
requestsPerMessage
request
Component 1
cpuTime,
memoryUsage
outputSize
outputSize
Component N
cpuTime,
memoryUsage
outputSize

# Communication



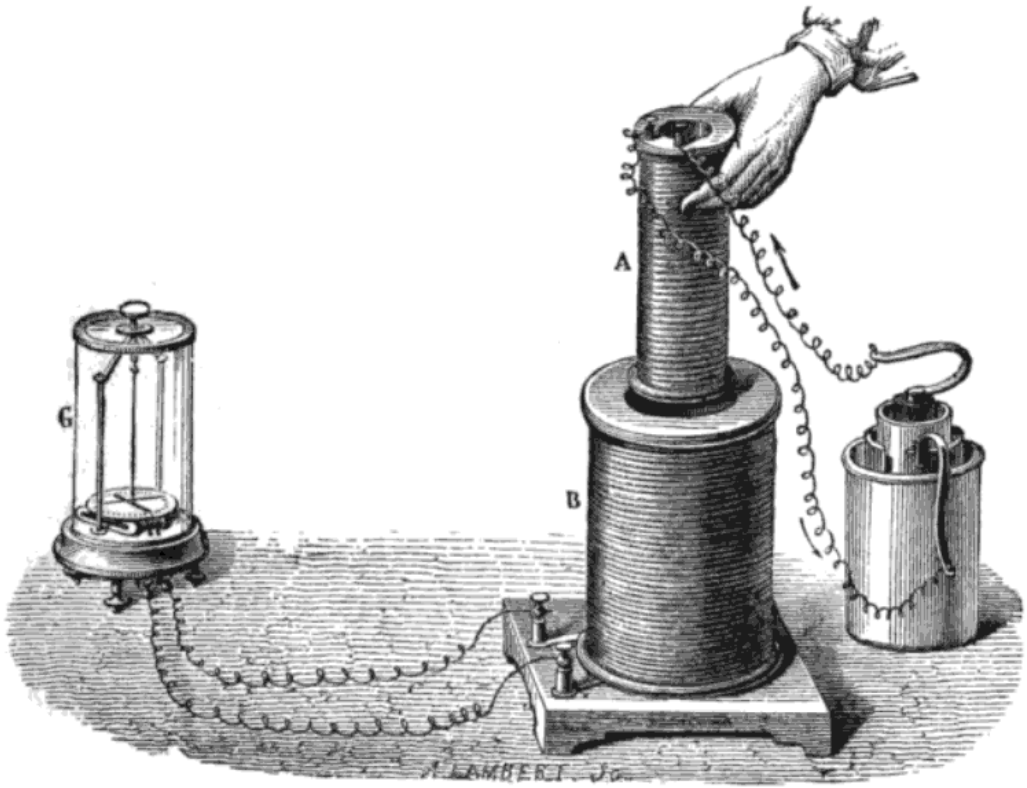
# Simple Linear Regression for Memory Usage Prediction



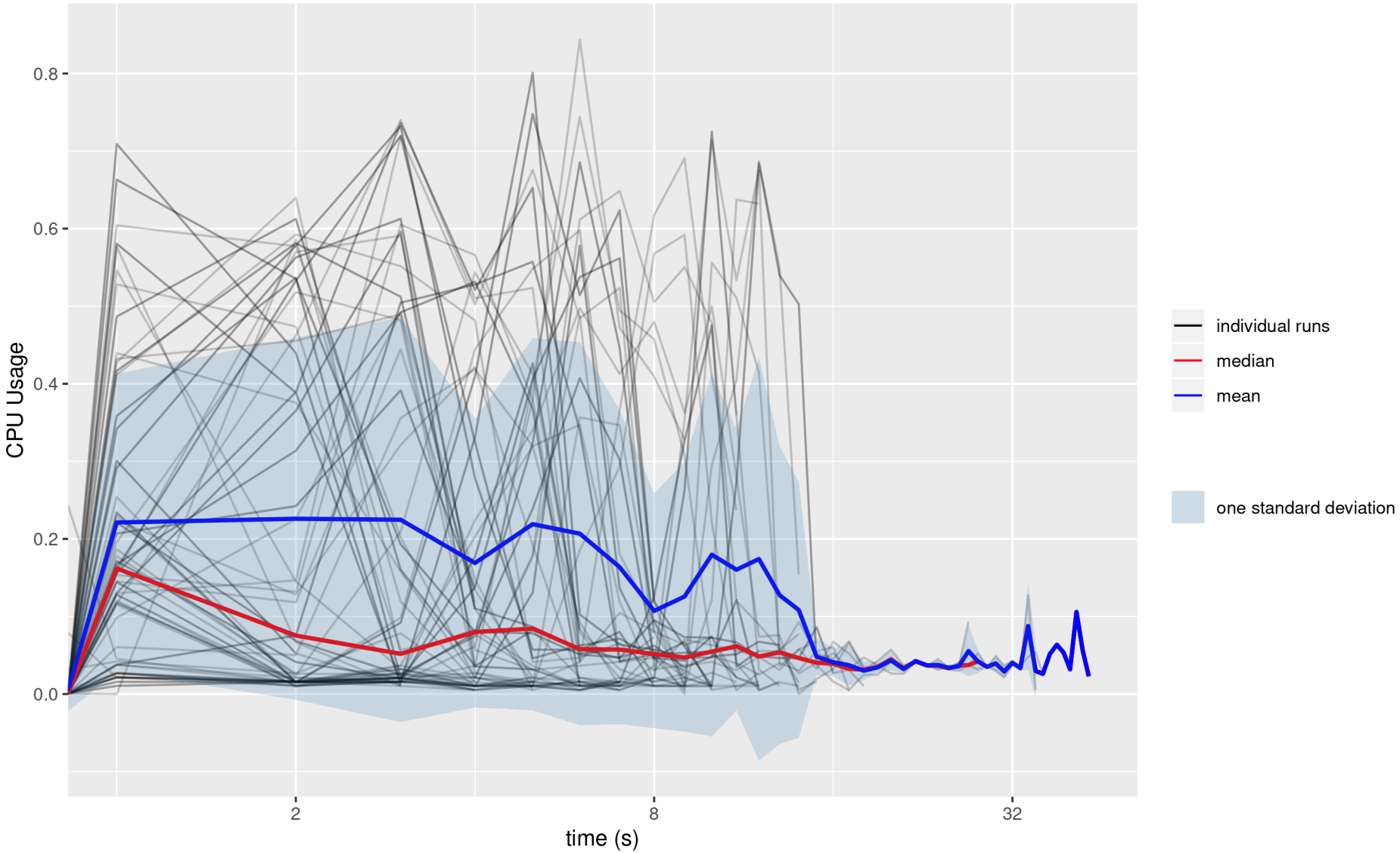
# Experiments on MiniShift

## Research Questions

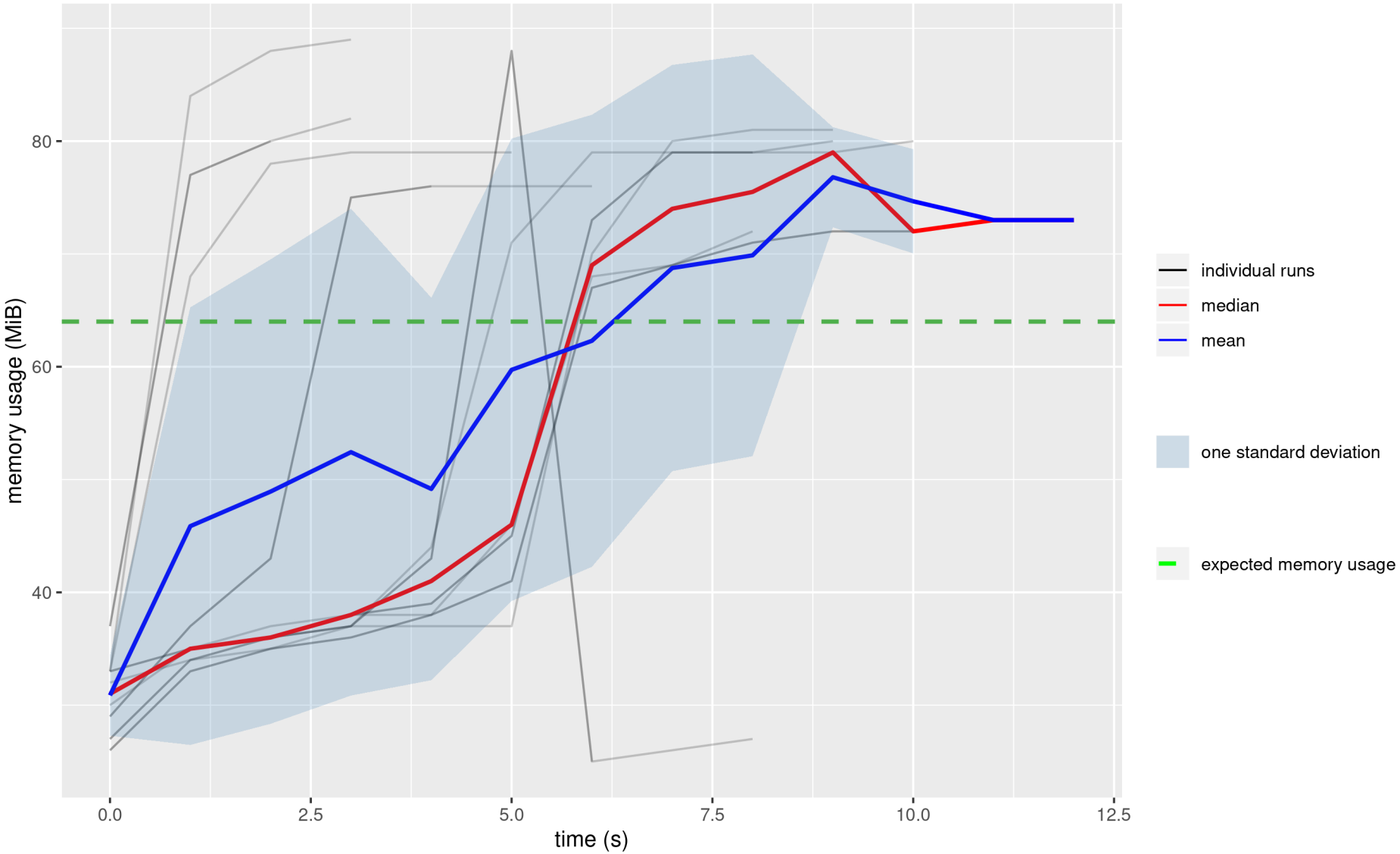
- How does perfected local performance transfer to a cloud setup?
- Can we use performance data in a time series format to recognise whether an application is performing as expected?



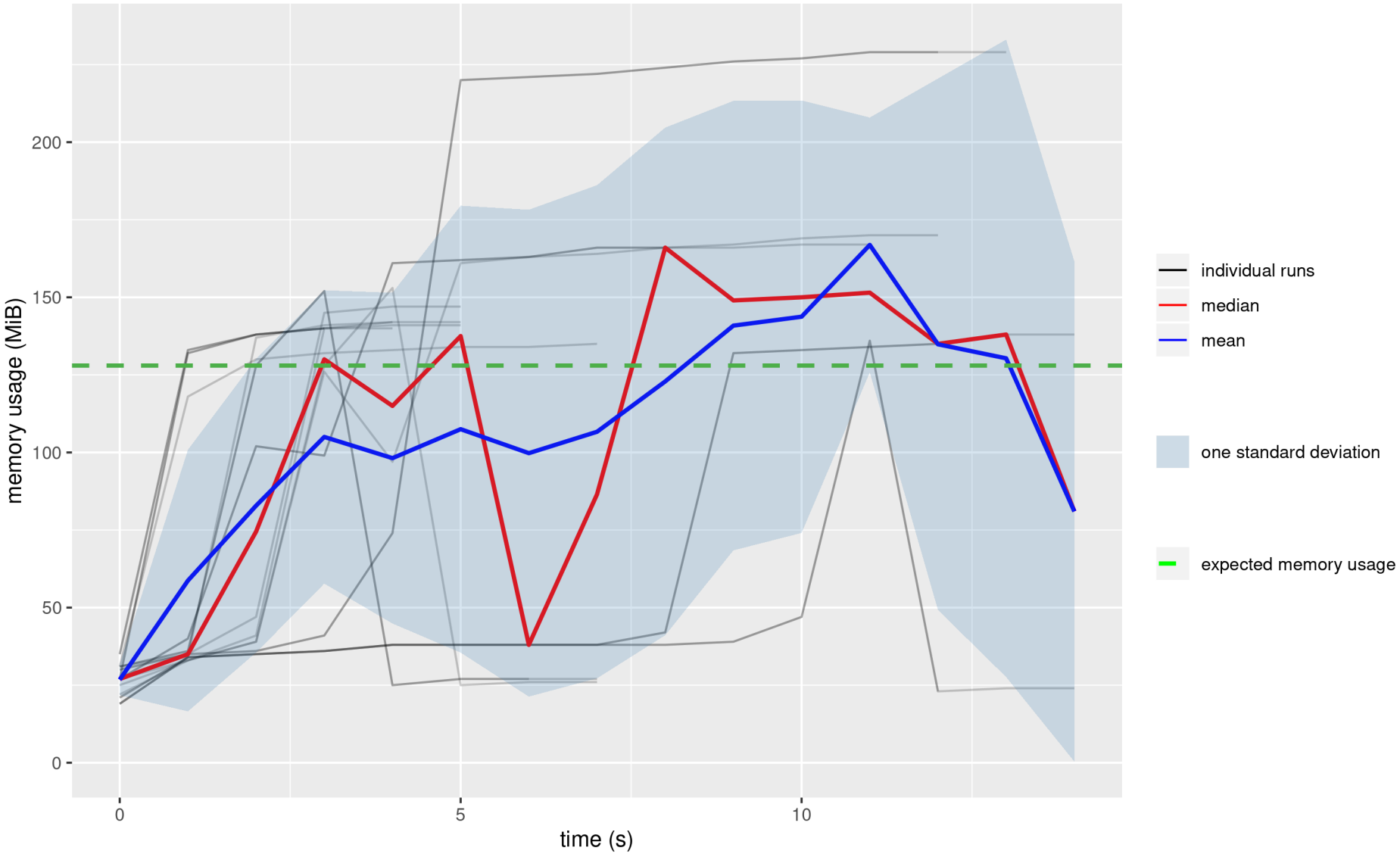
# CPU Usage


0.8
0.6
0.4
0.2
0.0
CPU Usage
2
8
32
time (s)
individual runs
median
mean
one standard deviation

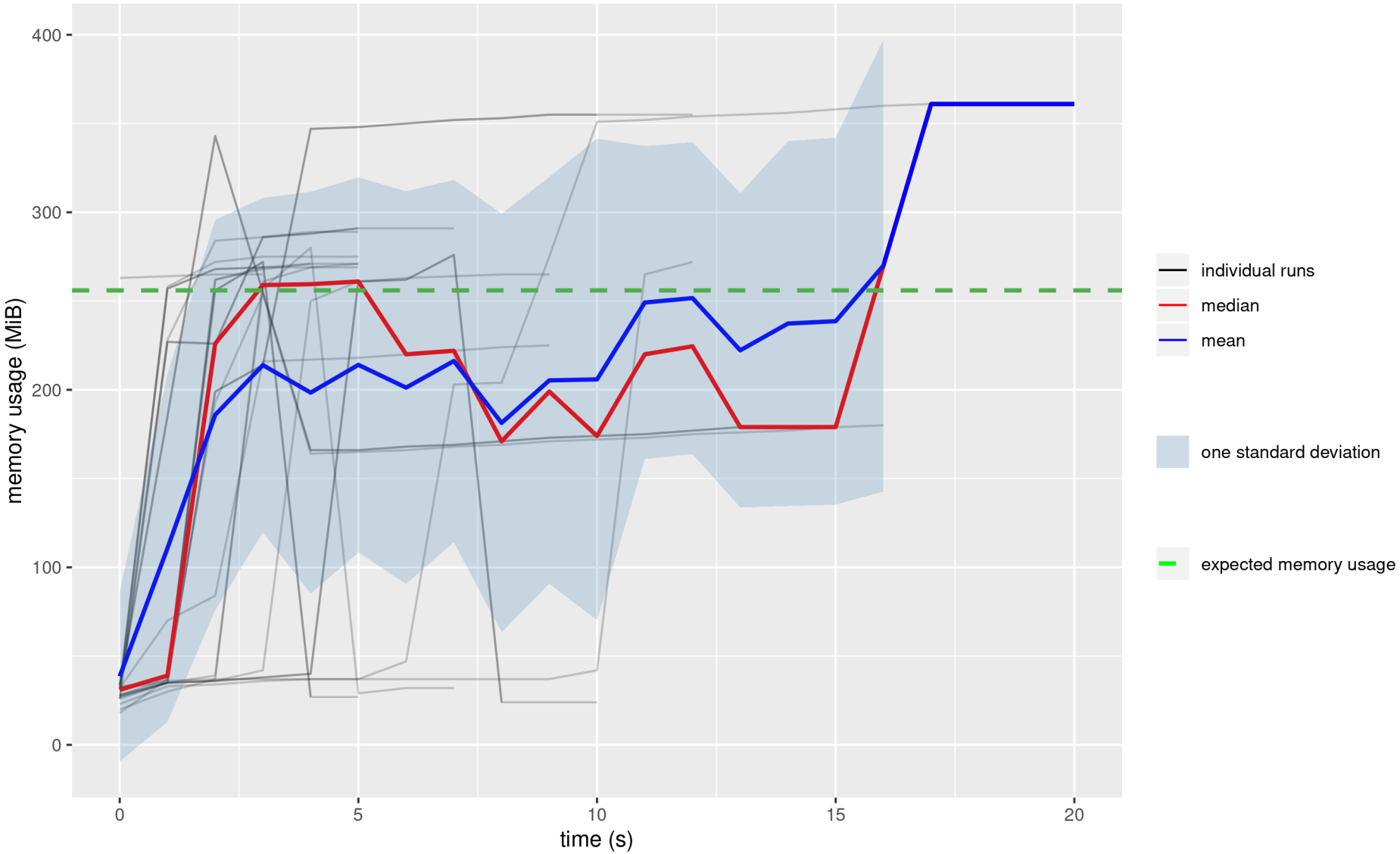
# Memory (64 MiB)



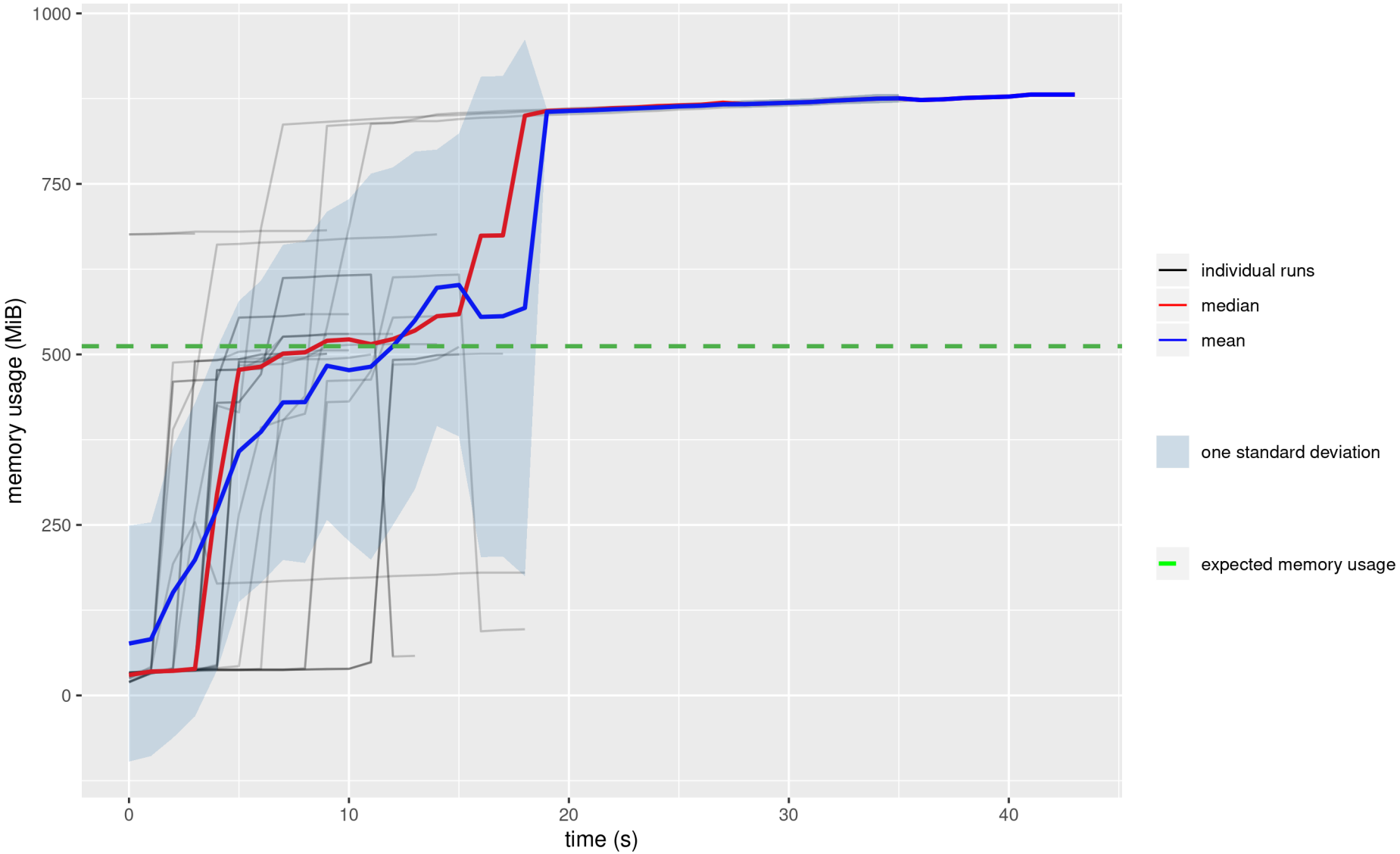
# Memory (128 MiB)



# Memory (256 MiB)



# Memory (512 MiB)



# Future Work

- Input/output simulation $\sim$ ✓
- Complex usage patterns ✓
- Automatically answering the question:
  - does this experiment show that the application could benefit from more resources?
- Complex component topologies

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*Thank You!*