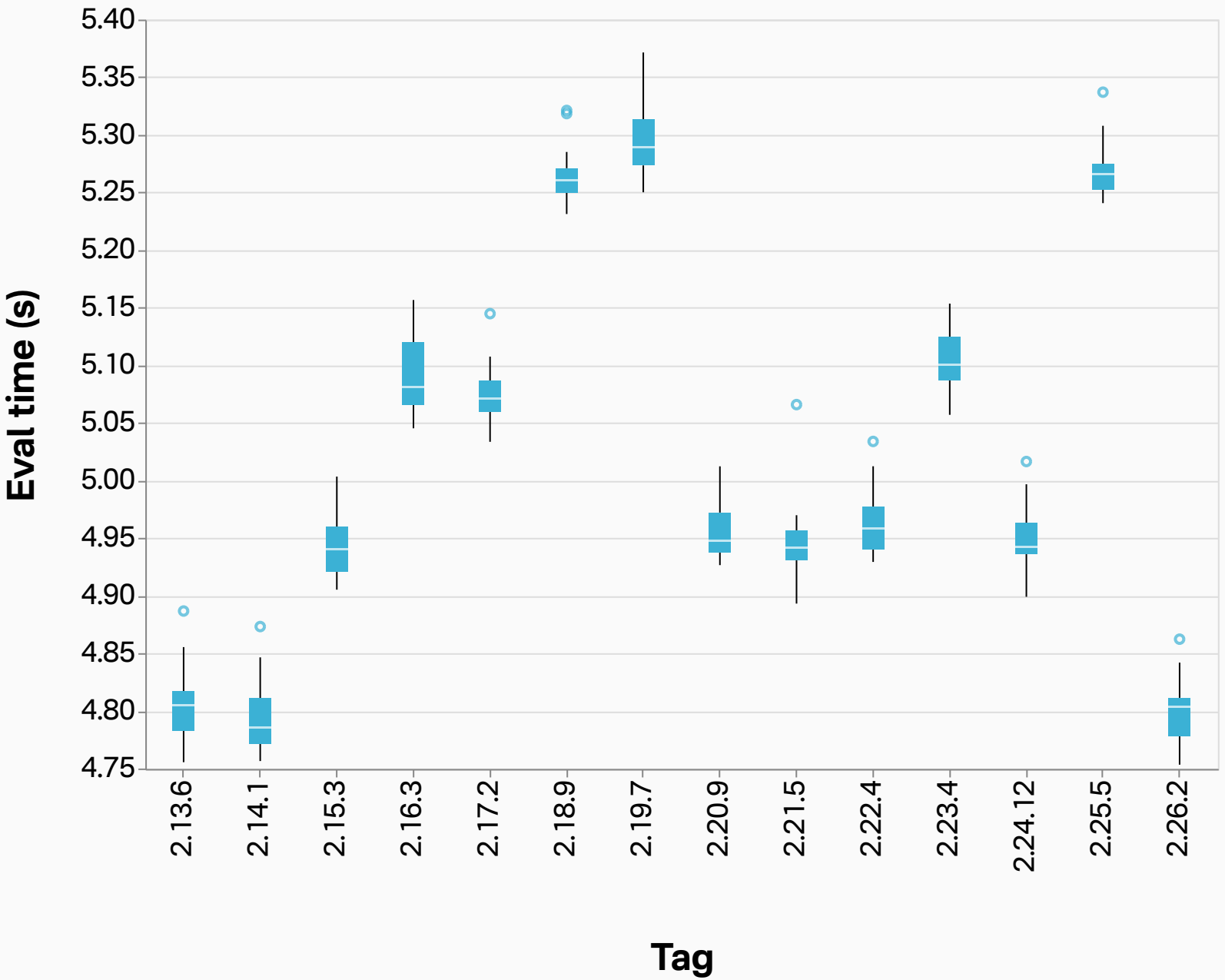
Evaluating `firefox-unwrapped`



Evaluating the Nix Evaluator

Why Nix Performance Sometimes... Doesn't

Connor Baker

2025-03-06

Planet Nix

Assumptions 📑

Nix evaluation performance...

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1. Can improve?

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   - Historically, yes!

Nix evaluation performance...

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   - Historically, yes!
2. Should improve?

Nix evaluation performance...

1. Can improve?
   - Historically, yes!
2. Should improve?
   - It depends!

Discussed improvements are **orthogonal** to those an **optimizing interpreter** provides.

Benchmarking setup 🕐

What do we want to measure?

- Space ✨
- Time ⏳

Why do we want to measure it?

- TODO

How will we measure it?

- TODO

Data visualization 📊

Nix evaluation performance trends

- Charts for evaluation performance over time
- Discuss axes on which evaluation can be expensive
  - Evaluator implementation
  - Nix data structures
  - Nix expressions

What's with all the garbage?

- TODO: benchmarks without GC running and without Boehm entirely
- Transition to looking at the actual implementations

Abridged data structures of the evaluator 🧬

Value

- Padding, etc.

List

- Special-cased for lists of size 0, 1, and 2, which can fit in a Value

Attribute set

- TODO: has it changed? I remember there being two arrays (one for names, one for values), but now it seems to be a vector of tuples.

Possible improvements

Persistent data structures

- TODO
- I mean, functional programming language with immutable values so why not benefit from sharing?
- Describe Immer library

Shrinking `Value`

- TODO: Link to branch I have with these changes

We can’t control how people use what we make

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