

# Lessons learned from maintaining OSS projects

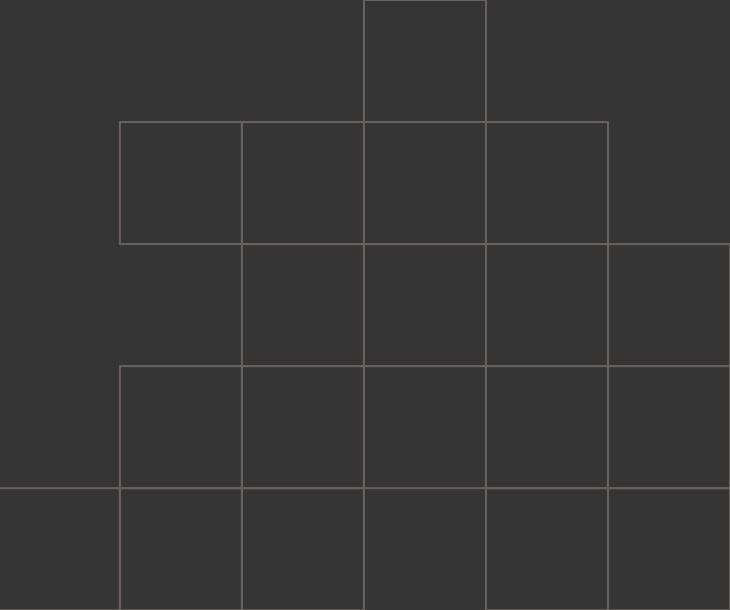
---

# About this talk

For 100 developers using OSS

10 contributors <- Hacktoberfest

1 maintainer <- This talk



# whoami

My name is Samuel.

- > Ex-CTO @ Screeb
- > GenAI Nantes community leader
- > Full-time open-sourcer in Q4 2025
- > Open to work (2026)



[github.com/samber](https://github.com/samber)

# My open-source projects



**Samuel Berthe**

samber · he/him

Full-time open-sourcer in Q4 2025.

Open to work for 2026.

## Pinned



io

Public

⭐ A Lodash-style Go library based on Go 1.18+ Generics (map, filter, contains, find...)



Go



20.3k



899



do

Public

⭐ A dependency injection toolkit based on Go 1.18+ Generics.



Go



2.4k



92



mo

Public

⭐ Monads and popular FP abstractions, powered by Go 1.18+ Generics (Option, Result, Either...)



Go



3.1k



107



awesome-prometheus-alerts

Public

⭐ Collection of Prometheus alerting rules



HTML



7.5k



1.1k



slog-multi

Public

⭐ Design workflows of slog handlers: pipeline, middleware, fanout, routing, failover, load balancing...



Go



559



23



oops

Public

⭐ Error handling library with context, assertion, stack trace and source fragments



Go



758



28

Customize your pins



# **1- Open-source software**

## **What and why ?**

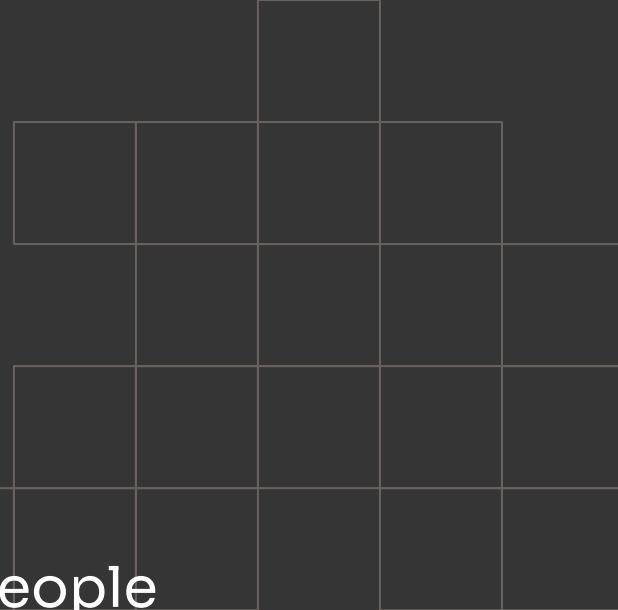
# Why ?

Give back to the community

Challenge your ideas with more skilled people

Personal branding

Employer branding



# How to start ?

Publish tools you built in your daily job

Not related to you company IP

`github.com/your-company/your-project`

vs

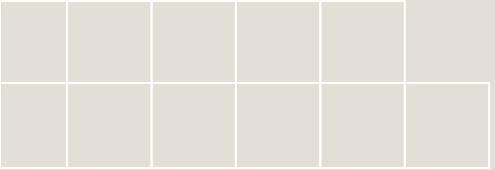
`github.com/you/your-project`

vs

`github.com/your-community/your-project`

# License

License	Type	Main Obligations	Commercial Use	Copyleft?
MIT	Very permissive	Keep copyright and license notice	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
BSD (2- or 3-clause)	Very permissive	Keep copyright; sometimes forbid using author's name for promotion	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Apache 2.0	Permissive with patent protection	Attribution + note modifications + patent clause	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
AGPL v3	Strong copyleft (includes network use)	Share complete source code, including for web apps	<span style="color: yellow;">⚠</span> Hard (incompatible with proprietary software)	<input checked="" type="checkbox"/> Yes, strong



## **2- Take care of developer experience**





Invest time in your README.

# Oops - Structured Error Handling for Go

Transform your Go error handling from "oops!" to "aha!" moments

tag v1.19.3 Go >= 1.21 go reference Tests passing go report A+ coverage 79% contributors 10 license MIT

**Oops** is a comprehensive Go error handling library that provides structured error management with rich contextual information. It's designed as a drop-in replacement for Go's built-in `error`, adding powerful features like stack traces, source code fragments, structured attributes, and developer-friendly debugging hints.

## ⌚ Key Features:

- 🕒 **Drop-in Replacement:** Seamlessly replaces standard Go error handling
- 📊 **Rich Context:** Add structured attributes, user info
- 🐍 **Debug-Friendly:** Out-of-the-box stacktraces and source code fragments
- 🔗 **Error Chaining:** Wrap and compose errors with additional context
- 🛡 **Panic Recovery:** Built-in panic handling with error conversion
- ✅ **Assertions:** One-line assertion helpers for validation
- ⚡ **Performance:** Zero dependencies, lightweight and fast
- 📝 **Logger Integration:** Works with all major Go logging libraries
- ✂️ **Separation of Concerns:** Error handling and logging are separate jobs
- 🔍 **Easy Integration:** No large refactoring required

## ⚠ Warning

**Important:** This is NOT a logging library. `oops` should complement your existing logging toolchain (zap, zerolog, logrus, slog, go-sentry...).

💻 Start hacking `oops` with this [playground](#).

The Go Playground

Go 1.25 Run Format Share Hello, World!

Press Esc to move out of the editor.

```
1 package main
2
3 import (
4     "time"
5
6     "github.com/samber/oops"
7     oopslogrus "github.com/samber/oops/loggers/logrus"
8     "github.com/sirupsen/logrus"
9 )
10
11 func main() {
12     logrus.SetFormatter(oopslogrus.NewOopsFormatter(&logrus.JSONFormatter{
13         PrettyPrint: true,
14     }))
15
16     err := oops.
17         Code("iam_authz_missing_permission").
18         In("authz").
19         Time(time.Now()).
20         With("user_id", 1234).
21         With("permission", "post.create").
22         Hint("Runbook: https://doc.acme.org/doc/abcd.md").
23         User("user-123", "firstname", "john", "lastname", "doe").
24         Errorf("permission denied")
25
26     logrus.WithError(err).Error(err)
27 }
28
29
30
31
32
33
{
    "code": "iam_authz_missing_permission",
    "context": {
        "permission": "post.create",
        "user_id": 1234
    }
}
```

## Context rich error handling

In a few minutes, your logs will look like this:

```
{  
  "time": "2023-05-02 05:26:48.570837Z",  
  "level": "ERROR",  
  "msg": "something failed: permission denied",  
  "error": {  
    "code": "iam_missing_permission",  
    "context": {  
      "hello": "world",  
      "permission": "post.create",  
      "user_id": 1234  
    },  
    "domain": "authz",  
    "tags": ["iam", "authz"],  
    "error": "something failed: permission denied",  
    "hint": "Runbook: https://doc.acme.org/doc/abcd.md",  
    "stacktrace":  
      "Oops: permission denied  
      --- at github.com/samber/oops/loggers/slog/example.go:20 (d)  
      --- at github.com/samber/oops/loggers/slog/example.go:24 (c)  
      Thrown: something failed  
      --- at github.com/samber/oops/loggers/slog/example.go:32 (b)  
      --- at github.com/samber/oops/loggers/slog/example.go:36 (a)  
      --- at github.com/samber/oops/loggers/slog/example.go:42 (main)",  
  "time": "2023-05-02 05:26:48.570837Z",  
  "trace": "e76031ee-a0c4-4a80-88cb-17086fdd19c0",
```



## Install

```
go get github.com/samber/oops
```



This library is v1 and follows SemVer strictly.

No breaking changes will be made to APIs before v2.0.0.

This library has no dependencies outside the Go standard library.

## 💡 Quick start

This library provides a simple `error` builder for composing structured errors, with contextual attributes and stack trace.

Since `oops.OopsError` implements the `error` interface, you will be able to compose and wrap native errors with `oops.OopsError`.

```
import "github.com/samber/oops"

func main() {
    // Simple error with context
    err := oops.
        In("user-service").
        Tags("database", "postgres").
        Code("network_failure").
        User("user-123", "email", "foo@bar.com").
        With("path", "/hello/world").
        Errorf("failed to fetch user: %s", "connection timeout")

    // Error wrapping
    if err != nil {
        return oops.
            Trace("req-123").
            With("product_id", "456").
            Wrapf(err, "user operation failed")
    }
}
```



# Spec

GoDoc: <https://godoc.org/github.com/samber/oops>

## Error builder

Method	Description
<code>.New(message string) error</code>	Formats returns <code>oops.OopsError</code> object that satisfies <code>error</code>
<code>.Errorf(format string, args ...any) error</code>	Formats an error and returns <code>oops.OopsError</code> object that satisfies <code>error</code>
<code>.Wrap(err error) error</code>	Wraps an error into an <code>oops.OopsError</code> object that satisfies <code>error</code>
<code>.Wrapf(err error, format string, args ...any) error</code>	Wraps an error into an <code>oops.OopsError</code> object that satisfies <code>error</code> and formats an error message
<code>.Recover(cb func()) error</code>	Handle panic and returns <code>oops.OopsError</code> object that satisfies <code>error</code> .
<code>.Recoverf(cb func(), format string, args ...any) error</code>	Handle panic and returns <code>oops.OopsError</code> object that satisfies <code>error</code> and formats an error message.
<code>.Assert(condition bool) OopsErrorBuilder</code>	Panics if condition is false. Assertions can be chained.
<code>.Assertf(condition bool, format string, args ...any) OopsErrorBuilder</code>	Panics if condition is false and formats an error message. Assertions can be chained.
<code>.Join(err1 error, err2 error, ...) error</code>	Join returns an error that wraps the given errors.

## Examples

```
// with error wrapping
err0 := oops.
    In("repository").
    Tags("database", "sql").
    Wrapf(sql.Exec(query), "could not fetch user") // Wrapf returns nil when sql.Exec() is ni

// with panic recovery
err1 := oops.
    In("repository").
    Tags("database", "sql").
    Recover(func() {
```

## 🤝 Contributing

- Ping me on Twitter @samuelberthe (DMs, mentions, whatever :))
- Fork the [project](#)
- Fix [open issues](#) or request new features

Don't hesitate ;)

```
# Install some dev dependencies  
make tools  
  
# Run tests  
make test  
# or  
make watch-test
```



## 👤 Contributors



## 👏 Show your support

Give a ⭐ if this project helped you!

SPONSORS

8

## 📝 License

Copyright © 2023 Samuel Berthe.

This project is [MIT](#) licensed.

# Invest time in your README.

## Notes:

- Don't list everything -> be useful
- Ask your ~~grandmother~~ intern to read the doc
- Ask ChatGPT to review your documentation
- Use [github.com/kefranabg/readme-md-generator](https://github.com/kefranabg/readme-md-generator)

# Add awesome illustrations with Midjourney

<https://samuelberthe.substack.com/p/create-awesome-illustrations-for>



# External documentation ?



👉 About

🚀 Getting started

⬅ Core

➡ Iterator

⬇ Mutable

➡ Parallel

📚 Glossary

🤝 Contributing

🏠 > 🚀 Getting started

## Getting started

samber/lo is a Lodash-style utility library for Go 1.18+ that leverages generics to provide type-safe helper functions. The library is organized into several packages, each serving different use cases.

### 🚀 Install

```
go get -u github.com/samber/lo@v1
```

### ⬅ Core Package (lo)

The main package provides immutable utility functions for slices, maps, strings, math operations, and more. It's the core of the library with over 300+ functions.

```
import "github.com/samber/lo"
```

🚀 Install

⬅ Core Package (lo)

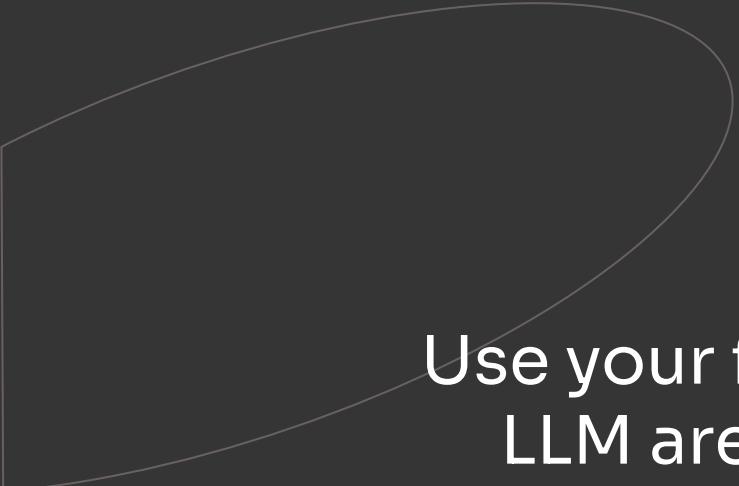
➡ Iter Package (lo/it)

⬇ Mutable Package  
(lo/mutable)

➡ Parallel Package  
(lo/parallel)

✓ Key Benefits

👀 Next Steps



Use your favorite Coding Agent.  
LLM are good at generating  
examples and comments.



# Developer experience from IDE ?

```
14
15  /**
16   * Builder pattern implementation for creating rich error objects.
17   *
18   * The builder pattern allows for fluent, chainable error creation with contextual
19   * information. This design provides a clean API for building complex error objects
20   * while maintaining readability and flexibility.
21   *
22   * Examples:
23   *
24   * Basic error creation:
25   *     oops.Error("Could not fetch users: %w", err)
26   *
27   * Rich error with context:
28   *     oops.
29   *         User("steve@apple.com", "firstname", "Samuel").
30   *         Tenant("apple", "country", "us").
31   *         Error("403 not permitted")
32   *
33   * Error with timing and tracing:
34   *     oops.
35   *         Time(requestDate),
36   *         Duration(requestDuration),
37   *         Trace(traceID),
38   *         Error("Failed to execute http request")
39   *
40   * Error with custom context:
41   *     oops.
42   *         With("project_id", project.ID, "created_at", project.CreatedAt).
43   *         Error("Could not update settings")
44   *
45   * Thread Safety: OopsErrorBuilder instances are not thread-safe. Each builder
46   * should be used by a single goroutine. The builder methods return new instances
47   * to support chaining, which provides some isolation but doesn't guarantee
48   * thread safety for concurrent access to the same builder instance.
49   */
50
51 // OopsErrorBuilder implements the builder pattern for creating OopsError instances.
52 // It provides a fluent API for setting error attributes and creating error objects.
53 // The builder is designed to be chainable, allowing multiple method calls in sequence.
54 type OopsErrorBuilder OopsError
55
```

```
128
129     // Wrap wraps an existing error into an OopsError with the current builder's context.
130     // If the input error is nil, returns nil. Otherwise, creates a new OopsError that
131     // wraps the original error while preserving all the contextual information set
132     // in the builder.
133     //
134     // Example:
135     //
136     //     err := oops.
137     //             Code("database_error").
138     //             In("database").
139     //             Wrap(originalError)
140     < func (o OopsErrorBuilder) Wrap(err error) error {
141         if err == nil {
142             return nil
143         }
144     }
```

```
1 package lo
2
3     // Keys creates a slice of the map keys.
4     // Play: https://go.dev/play/p/Uu11fHASqrU
5     < func Keys[K comparable, V any](in ...map[K]V) []K {
6         size := 0
7         for i := range in {
8             size += len(in[i])
9         }
10        result := make([]K, 0, size)
```

```
// Shuffle returns a slice of shuffled values. Uses the Fisher-Yates
// algorithm. Play: https://go.dev/play/p/ZTGG70UCdnp
//
// Deprecated: use mutable.Shuffle() instead.
func Shuffle[T any, Slice ~[]T](collection Slice) Slice {
    mutable.Shuffle(collection)
    return collection
}
```

```
lo.Shuffle([]string{"foo", "bar", "", "baz"}) |
```

# Index your documentation



Context7

Personal  Dashboard

MCP Server

+ Add

## Add Libraries

Select and add your documentation source



GitHub



GitLab



LLMs.txt



Website

 Private Repo

GitHub URL

Use public/open-source GitHub repos with URLs like: <https://github.com/username/repo>

Submit

Which repo would you like to understand?

 Search for repositories (or paste a link)



Add repo



microsoft / vscode

Visual Studio Code

☆ 170.1k



text Protocol (MCP),  
LLM applications and...



antiwork / gumroad

☆ 5.2k



Last indexed: 14 October 2025 (8fd70e)

## Overview

[Getting Started](#)[Core Library](#)[Observable and Observer Patterns](#)[Subjects](#)[Core Operators](#)[Testing Observables](#)[Core Testing Framework](#)[Testify Plugin](#)[Plugin Ecosystem](#)[Data Transformation Plugins](#)[Template Plugin](#)[Strconv Plugin](#)[Sort Plugin](#)[Regexp Plugin](#)[Iter Plugin](#)[I/O and Communication Plugins](#)[WebSocket Client Plugin](#)

## Overview

### Relevant source files

This document provides an architectural overview of the `ro` reactive programming library for Go. It covers the repository structure, core abstractions, plugin ecosystem, testing infrastructure, and development workflows. For hands-on tutorials and basic usage, see [Getting Started](#). For in-depth technical details of the core library, see [Core Library](#).

## Purpose and Scope

`ro` is a reactive programming library for Go that implements the Observable pattern with a comprehensive plugin ecosystem. This overview explains:

- The repository's monorepo structure and Go workspace organization
- Core reactive primitives (Observable, Observer, Subject)
- The 23+ plugin modules that extend the core library
- Testing frameworks for validating observable behavior
- CI/CD pipelines and release automation
- Enterprise Edition features

For specific plugin documentation, see [Plugin Ecosystem](#). For testing observables, see [Testing Observables](#). For contributing and development workflows, see [CI/CD and Development](#).

## Repository Structure

[Refresh this wiki](#)[Enter email to refresh](#)

## On this page

### Overview

[Purpose and Scope](#)[Repository Structure](#)[Workspace Organization](#)[File Structure](#)[Core Library Architecture](#)[Core Reactive Primitives](#)[Plugin Ecosystem](#)[Plugin Categories and Module Paths](#)[Plugin Version Requirements](#)[Testing Infrastructure](#)[Testing Framework Components](#)[Testing Workflow](#)[CI/CD and Development Workflow](#)[GitHub Actions Workflows](#)[Test Matrix Coverage](#)

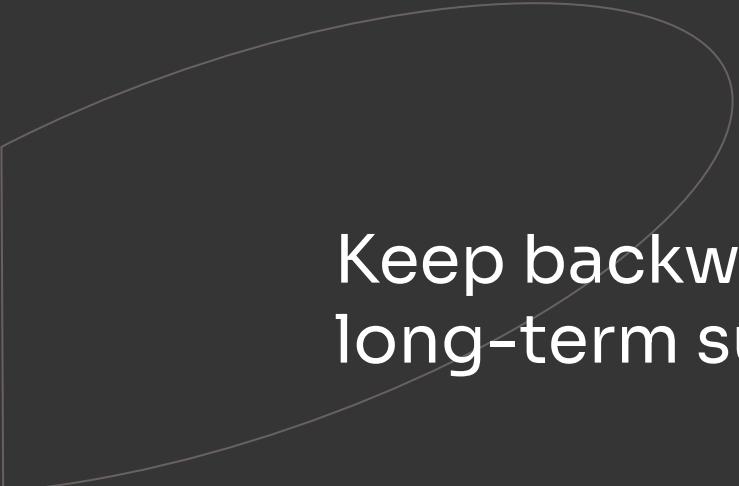
# SEO is dead, long live GEO

Markdown everywhere  
Short sentences

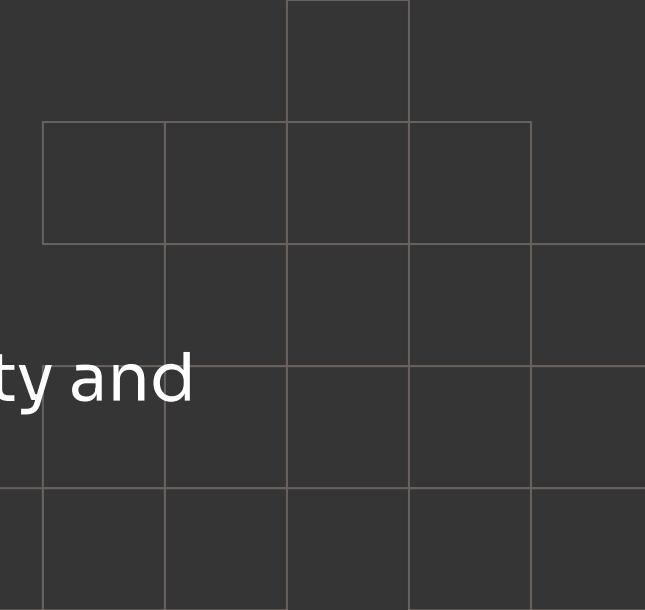
FAQ

Mermaid diagrams  
llms.txt

...



Keep backward compatibility and  
long-term support (LTS)



Cross-platform compatibility

# Releases

- Stick to SEMVER strongly
- Avoid breaking changes
- Releases often
- Generate releases in a Github Action



samber / awesome-prometheus-alerts

Code Issues 39 Pull requests Discussions Activity

Releases Tags

Tags

2025-04-17.1 ...  
on Apr 17 · a75d512 · zip · tar.gz · Notes

2024-05-13.1 ...  
on May 13, 2024 · 396083a · zip · tar.gz · Notes

2024-05-06.1 ...  
on May 6, 2024 · 59e6a91 · zip · tar.gz · Notes

2024-05-02.1 ...  
on May 2, 2024 · 5c09635 · zip · tar.gz · Notes

# Write changelogs

v1.52.0

Latest

Compare ▾  

github-actions released this yesterday · 1 commit to master since this release · v1.52.0 · a25c42d

Thrilled to announce the latest release of `samber/lo` !

This version brings major improvements:

- A new `it/` sub-package for everything related to the `iter` package added in Go 1.23. Big up to @NathanBaulch for its help on this
- A new documentation -> [lo.samber.dev](https://lo.samber.dev)
- Lots of micro fixes and performance improvements
- Better code quality with many more linters

💡 A good introduction to streams in Go !



## What's Changed

- fix(chunk): Copy chunk in a new slice by @samber in #648
- fix(zipx): fix the max length calculation by @samber in #649
- fix(retry): fix potential race condition in debounce callback by @samber in #650
- feature: add Mode function with tests and documentation by @ghosx in #644
- add FilterKeys for map by @rasha108bik in #631
- feat: adding FilterValues and fix FilterKeys signature by @samber in #661 #662

# Write changelogs

[Releases](#) / Edit v1.52.0

## Edit v1.52.0

🏷 Tag: v1.52.0 ▾

✓ Existing tag

Release title

v1.52.0

Release notes

Select a previous tag to create generated release notes

🏷 Previous tag: v1.51.0 ▾

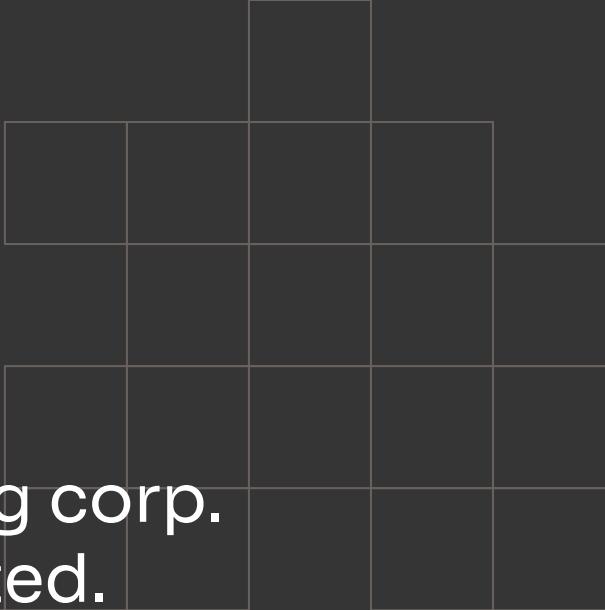
Generate release notes

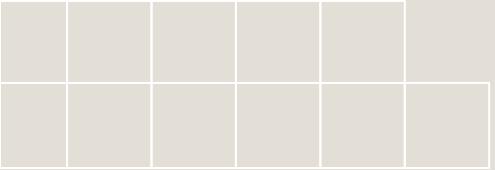
Write

Preview



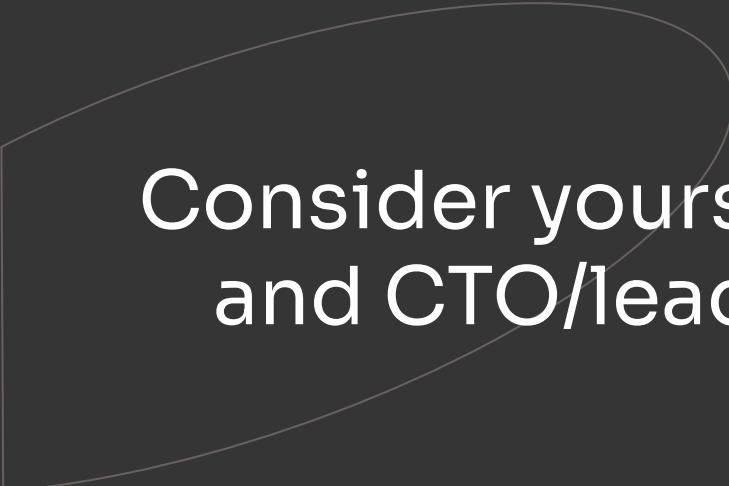
Releases are reviewed by big corp.  
Missing commits are detected.





## **3- Take care of contributor experience**

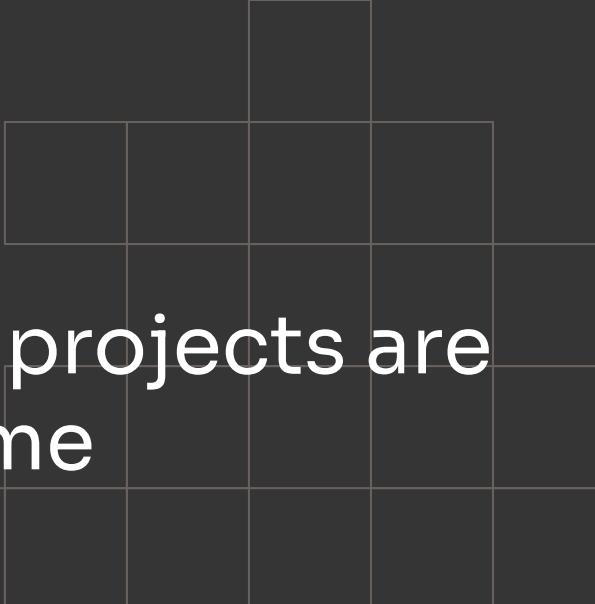




Consider yourself as the product manager  
and CTO/lead developer of the project



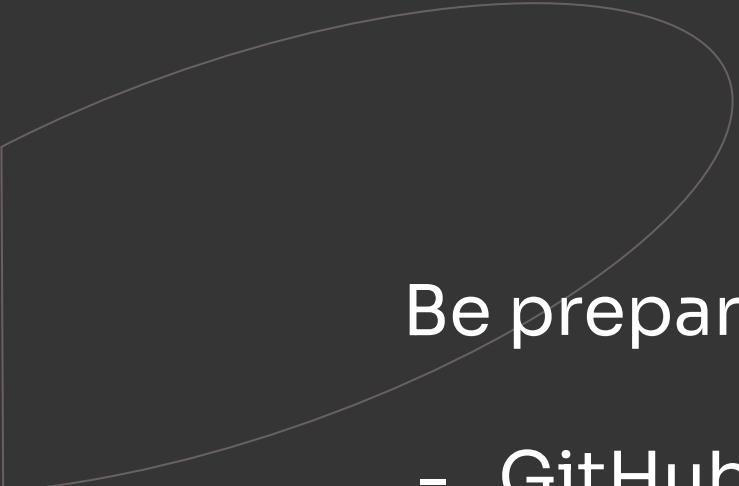
Organize the community  
and the discussions



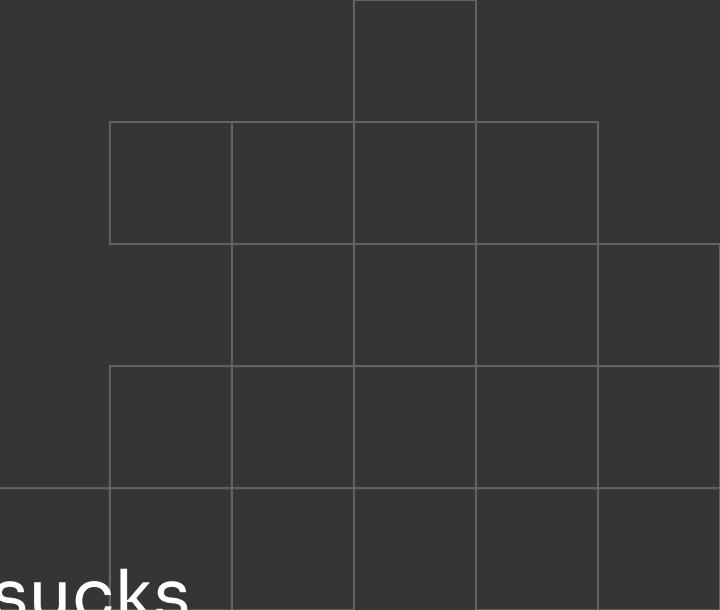
Open source and proprietary projects are  
pretty much the same

Except:

- No Jira
- No meeting



Be prepared:

- GitHub issue triage sucks
  - Project management on GitHub
- 

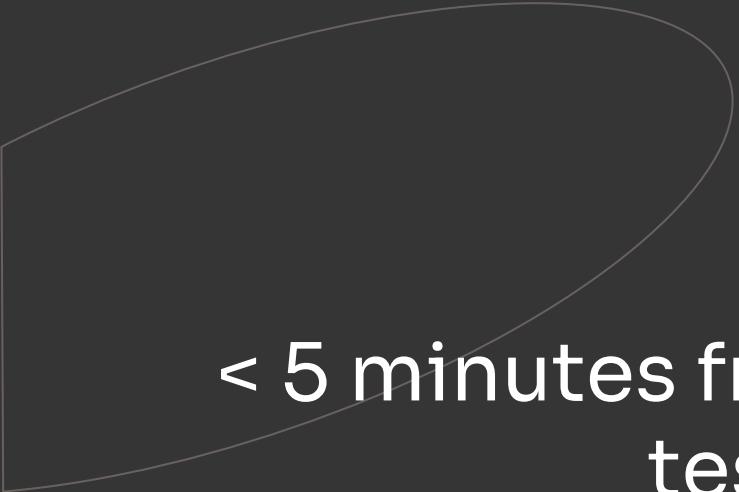
# Focus yourself on hard tasks and reviews

...and redirect new contributors to “*good first issues*”

A screenshot of a GitHub search results page. The search query is "is:issue state:open label:'good first issue'". The results show five open issues, each with a green circular icon containing a white circle and a question mark. The issues are:

- Tests: more tests on variants** (core, good first issue, tests) #106 · samber opened 5 days ago
- Operators: add "Serialize" operator** (core, good first issue, operator) #96 · samber opened 5 days ago
- Plugin: add more operators on strings+regexp+strconv+bytes** (good first issue, operator, plugin) #89 · samber opened 5 days ago
- Plugin: add more operators on "sort" plugin** (good first issue, operator, plugin) #88 · samber opened 5 days ago
- Plugin: add more plugins of type "encoding"** (core, good first issue, operator) #87 · samber opened 5 days ago

The GitHub interface includes a header with "Open 31" and "Closed 0", and dropdown menus for "Author", "Labels", and "Project".



< 5 minutes from clone to first LoC or  
tests execution



# Write a contributing guide (CONTRIBUTING.md)



## Contributing

- Ping me on Twitter [@samuelberthe](#) (DMs, mentions, whatever :))
- Fork the [project](#)
- Fix [open issues](#) or request new features

Don't hesitate ;)

```
# Install some dev dependencies  
make tools
```

```
# Run tests  
make test  
# or  
make watch-test
```

# Write a contributing guide (CONTRIBUTING.md)

The screenshot shows a GitHub repository interface with the CONTRIBUTING.md file open. The file contains the following content:

```
Code | Blame 48 lines (30 loc) · 2.71 KB
```

**Contributors guide v0.1**

---

## How can I help?

We are always happy to help you in contributing to Watermill. If you have any ideas, please let us know on our [Discord server](#).

There are multiple ways in which you can help us.

## Existing issues

You can pick one of the existing issues. Most of the issues should have an estimation (S - small, M - medium, L - large).

- [Good first issues list](#) - simple issues to begin with
- [Help wanted issues list](#) - tasks that are already more or less clear, and you can start to implement them pretty quickly

## New Pub/Sub implementations

If you have an idea to create a Pub/Sub based on some technology and it is not listed yet in our issues (because we don't know it, or it is just some crazy idea, like physical mail based Pub/Sub), feel free to add your own implementation. You can do it in your private repository or if you want, we can move it to `ThreeDotsLabs/watermill-[name]`.

*Please keep in mind that you will not be able to push changes directly to the master branch in a project in our organization.*

When adding a new Pub/Sub implementation, you should start with this guide: <https://watermill.io/docs/pub-sub-implementing/>.

## New ideas



- 👉 About
- 🚀 Getting started
- 👈 Core
- 🔗 Iterator
- 👉 Mutable
- 👉 Parallel
- 📚 Glossary
- 👉 Contributing

# 🤝 Contributing

Hey! We are happy to have you as a new contributor. 🤝

For your first contribution please follow some guidelines:

## Function Naming

Function naming: helpers must be self-explanatory and respect standards (other languages, libraries...). Feel free to suggest many names in your contributions.

## Variadic functions

Many functions accept variadic parameters (like `lo.Keys(...map[K]V)` accepting multiple maps), providing flexibility while maintaining type safety.

## Slice type Parameters

Functions use `~[]T` constraints to accept any slice type, including named slice types, not just `[]T`. This design choice makes the library more flexible in real-world usage.

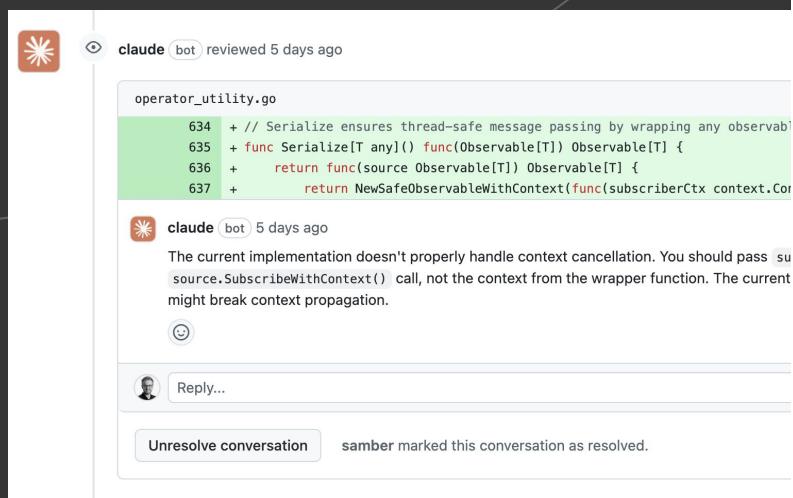
## Variants

When applicable, some functions can be added to sub-package as well: `mutable`, `it` and `parallel`. Add a documentation for each helper.

### Function Naming

- Variadic functions
- Slice type Parameters
- Variants
- Testing
- Benchmark and performance
- Documentation
- Examples

# Write a contributing guide



```
uses: anthropics/clause-code-action@v1
env:
  ANTHROPIC_BASE_URL: ${{ secrets.ANTHROPIC_BASE_URL }}
  ANTHROPIC_MODEL: ${{ secrets.ANTHROPIC_MODEL }}
  ANTHROPIC_AUTH_TOKEN: ${{ secrets.ANTHROPIC_AUTH_TOKEN }}
with:
  anthropic_api_key: ${{ secrets.ANTHROPIC_AUTH_TOKEN }}
prompt: |
  REPO: ${{ github.repository }}
  PR NUMBER: ${{ github.event.pull_request.number }}
  AUTHOR: ${{ github.event.pull_request.user.login }}
```

Please review this pull request with a focus on:

- Code quality and best practices
  - Potential bugs or issues
  - Security implications
  - Performance considerations
  - Potential breaking changes
  - Developer experience and documentation

Check contribution guidelines: ./docs/docs/contributing.md

Check extending ro guidelines: ./docs/docs/hacking.md

Check examples/documentation guidelines: ./docs/CLAUDE.md

Check troubleshooting guidelines: [./docs/docs/troubleshooting/](#)

If you need more context on the project, read the LLMs documentation: [./docs/static/llms.txt](#)

# Issue/PR templates

Create new issue ✖

---

 **Bug Report** →  
Create a report to help us improve.

---

 **Feature request** →  
Suggest an idea for this project.

---

 **Report a security vulnerability**  
Please review our security policy for more details

---

 **Documentation**  
Please take a look to our documentation.

---

 **Questions**  
If you have a question, or are looking for advice, please post on our Discussions forum!

---

 **Chat on Slack**  
Maybe chatting with the community can help

# Issue/PR templates

Ask for reproducible demo of the bugs.

Write checklist for new features

...or you're going to waste massive amount of time  
with junior developers.

# Issue/PR templates

.github / ISSUE\_TEMPLATE / [🔗](#)

samber docs: new website (#55) ✓

Name
..
bug_report.yml
config.yml
feature_request.yml

# Labels

Search all labels

12 labels

bug

Something isn't working

dependencies

Pull requests that update a dependency file

discussion needed

Further information is requested

enhancement

New feature or request

go

Pull requests that update go code

good first issue

Good for newcomers

help wanted

Extra attention is needed

javascript

Pull requests that update javascript code

L

large issue

M

medium issue

New Pub/Sub

# Labels

# Milestone

samber / do

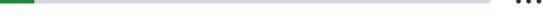
Type  to search

 Code  Issues 27  Pull requests 5  Discussions  Actions  Security 25  Insights  Settings 

## Milestones

New milestone

Open 3 Closed 0 Sort ▾

Milestone	Progress	Open	Closed
v2.2 No due date • 0/2 issues closed	 0% complete	2 open	0 closed
v2.1 No due date • 2/21 issues closed	 9% complete	19 open	2 closed
v2 No due date • 9/12 issues closed	 75% complete	3 open	9 closed

# Be diligent

samber / io

Code Issues 122 Pull requests 86 Discussions Activities

## Library Maintenance Help? #573

**Open**

takanuva15 opened on Jan 16

Hi @samber, would you consider having more maintainers on this repo to help? There are a lot of great PRs that have been open for months which would make the work involved in reviewing, merging, and deploying PRs while dealing with other responsibilities.

I use Golang professionally at work and I have contributed to other open-source projects.

maticmeznar on Jan 22

@samber What is the status of the v2 branch?

10

vocctor on Dec 1, 2022

Any other progress?  
@samber

Smiley face icon

samber / mo Public

Code Issues 12 Pull requests 5 Activities

## Is this project abandoned? #53

**Closed**

venil7 opened on Oct 14, 2024

Missing basic things like .Map , .FlatMap on Task , Tas

# Project management is painful on GitHub

# Λ Neat

## To do

-  Mentioned in issue 181 **Allow Union/Intersect to take many lists** 4d
-  Subscribed by willie68 in do 6d **Needed InvokeNamedAs, MustInvokeNamed...**
-  Comment by edocevol in do 24d **Proposal (v2): Injector should implement co...**
-  Subscribed by Vilsol in do 24d **feat: add InvokeAsAll for bulk service invoca...**
-  Subscribed by james-at-upmind in do 25d **Access to context.Context in Provider & 'mu...**
-  Subscribed by ohroy in do 25d **feat: add Delete method to remove scopes**
-  Subscribed by ohroy in do 25d **Neat**

# Find hot issues/PR

A screenshot of a GitHub search interface. At the top, there are buttons for Labels, Milestones, and New issue. Below them are dropdown menus for Assignees and Reactions. The Reactions dropdown is open, showing a "Sort by" section with options: Created on, Last updated, Total comments, Best match, and Reactions (which is selected, indicated by a checkmark). Below this is an "Order" section with Ascending and Descending options. The main search results area shows two items: one with 4 reactions and another with 2 reactions.

Assignees

Milestones

New issue

Reactions

Sort by

- Created on
- Last updated
- Total comments
- Best match
- ✓ Reactions >

Order

- Ascending
- ✓ Descending >

4	
2	

A screenshot of a GitHub search interface. At the top, there are buttons for Labels, Milestones, and New issue. Below them are dropdown menus for Labels, Milestones, and Reactions. The Reactions dropdown is open, showing a "Sort by" section with options: Created on, Last updated, Total comments (which is selected, indicated by a checkmark), Best match, and Reactions (which is selected, indicated by a checkmark). Below this is an "Order" section with Ascending and Descending options. The main search results area shows one item with 7 comments.

Labels

Milestones

New issue

Reactions

Sort by

- Created on
- Last updated
- ✓ Total comments
- Best match
- ✓ Reactions >

Order

- Ascending
- ✓ Descending >

7	
---	--

# Issue triage: deduplication, labeling, reformulate...

## Multiple registration and bulk invocation #114

 Open



samber opened on Aug 18 · edited by samber

Currently, the framework authorizes only a single registration per type. Calling twice `do.Pro` trigger an error. In that situation, the invocation is much simpler because we can find at most

However, starting with v2, we will support service aliasing, either via explicit declaration (`do` implicit invocation (`do.InvokeAs[Alias](...)`), which loads the first service implementing t

Note: currently, a developer can override a service using `do.OverrideXXX(...)`. It has been replacement in unit tests, and should be combined with `.Clone()` method of `RootScope`. If service invocation, the service is replaced, but not unloaded/shutdowned.

Multiple contributors asked for an improvement: [#33](#) [#75](#) [#45](#) [#52](#) [#117](#)

Poke @matdurand @svenwltr @danilobuerger @d-enk @mbark @GregPja @Jictyvoo

# Don't be an asshole with contributors...

... but some  
contributors will be  
an asshole with you



**Emily Kager** @EmilyKager · Aug 19, 2021

working in open source is the working retail of software



**Wardell Bagby**

@wardellbagby



- entitled people screaming at you to do stuff
- being paid extremely little
- large companies taking advantage of you.

You hit the damn nail RIGHT ON THE HEAD.

Say “no”



**Solomon Hykes** 

@solomonstre

Rule #1 of open-source: no is temporary, yes is forever.

10:38 PM · Mar 30, 2016

# Closed issue -> no problem 😐



github-actions (bot) commented now

...

This issue has been automatically locked since there has not been any recent activity after it was closed.  
Please open a new issue for related bugs.



github-actions (bot) locked as **resolved** and limited conversation to collaborators now

# Hard to collect feedback as a maintainer

## Spec: about index argument in iteratee #579

 Open

samber opened on Jan 25

Owner 

Go does not support optional arguments. We have to duplicate helpers if we want to make the `index int` argument optional.

I'm opening this issue to discuss a new standard for naming helpers.

- `lo.Map(list, func(item T) U -> no index)`
- `lo.MapI(list, func(item T, index int) U -> index)`

The `I` suffix might not be comprehensible. I would suggest `WithIndex` as second choice.

It might introduce a large breaking change because `Map` and `Filter` are concerned. (see discussion about v2: [#578](#))

Also, I wonder what would be the best type for this index:

- `int` is simple
- `int64` for larger collections (useless 99.9% of time)
- `uint64` the most accurate type

Don't forget that passing a function to a helpers is a very developer-friendly API: `lo.Map(collection, aFunc)`. Since `int` is the most used type it seems valuable to avoid any exotic typing and cast.

Linking issues & PR: [#565](#)

Create sub-issue 



7



6

 Edit

 New issue

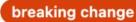


### Assignees

No one - [Assign yourself](#)

 Assign to Copilot

### Labels

 `breaking change`  `spec`

### Projects

No projects

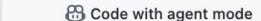
### Milestone

 `v2`  
No due date

### Relationships

None yet

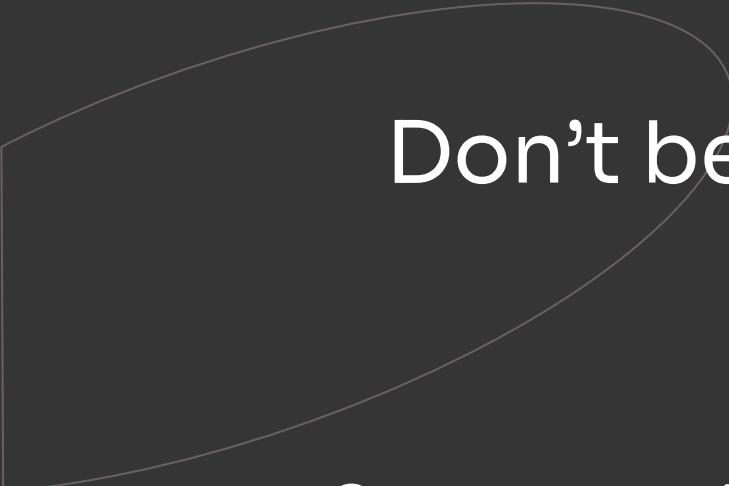
### Development

 Code with agent mode

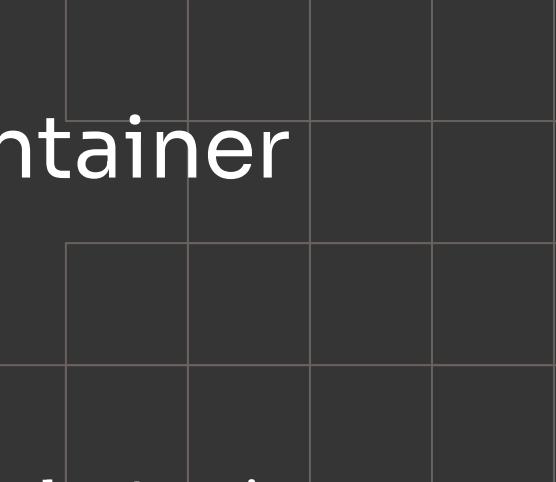
[Create a branch](#) for this issue or link a pull request.

### Notifications

Customize



# Don't be a solo-maintainer



Open-source is a hobby and/or volunteering.

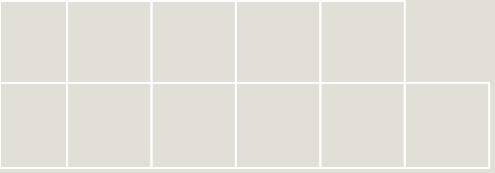
Build a strong co-maintainer team early.

# Don't be a solo-maintainer

Find key contributors on the front page of your project:

**Contributors** 147

+ 133 contributors



**4- Spread the word\***

**and get adoption**



\*Feel free to yell at me during the next 5min

# Snowball effect

more users



more contributors



better project



repeat

Imagine you need a **React date picker**.

You go on **GitHub** and find **4** different open-source projects that could fit.

*Turn to the persons next to you, and tell them your criteria (1 min)*

blabla / **datepicker**

Type to search

Code Issues Pull requests Actions Projects Security Insights

**datepicker** Public

Sponsor Watch 4 Fork 22 Star 335

main Go to file + <> Code

Elon chore: bump react to the v19 (#75) a23eebc · 2 years ago 35 Commits

.github fix: support node 16 for legacy rea... 2 years ago

.husky infra: move to pnpm workspace (#... 4 years ago

About Date picker

react hook time-picker date-picker range-picker react-hooks

Readme

wojtekmaj / **react-date-picker**

Type to search

Code Issues 10 Pull requests 14 Discussions Actions Wiki Security Insights

**react-date-picker** Public

Sponsor Watch 11 Fork 202 Star 1.3k

main Go to file + <> Code

wojtekmaj Bump typescript from 5.5.2 to ... d92806f · 2 weeks ago 1,159 Commits

.github Remove unnecessary provenance f... 2 weeks ago

.husky Replace ESLint and Prettier with Bi... last year

About

A date picker for your React app.

[projects.wojtekmaj.pl/react-date-picker](https://projects.wojtekmaj.pl/react-date-picker)

react date calendar date-picker month-picker

Used by 18.9k



Contributors 147



+ 133 contributors

Unwatch 78 Fork 900 Star 20.3k

Code

About



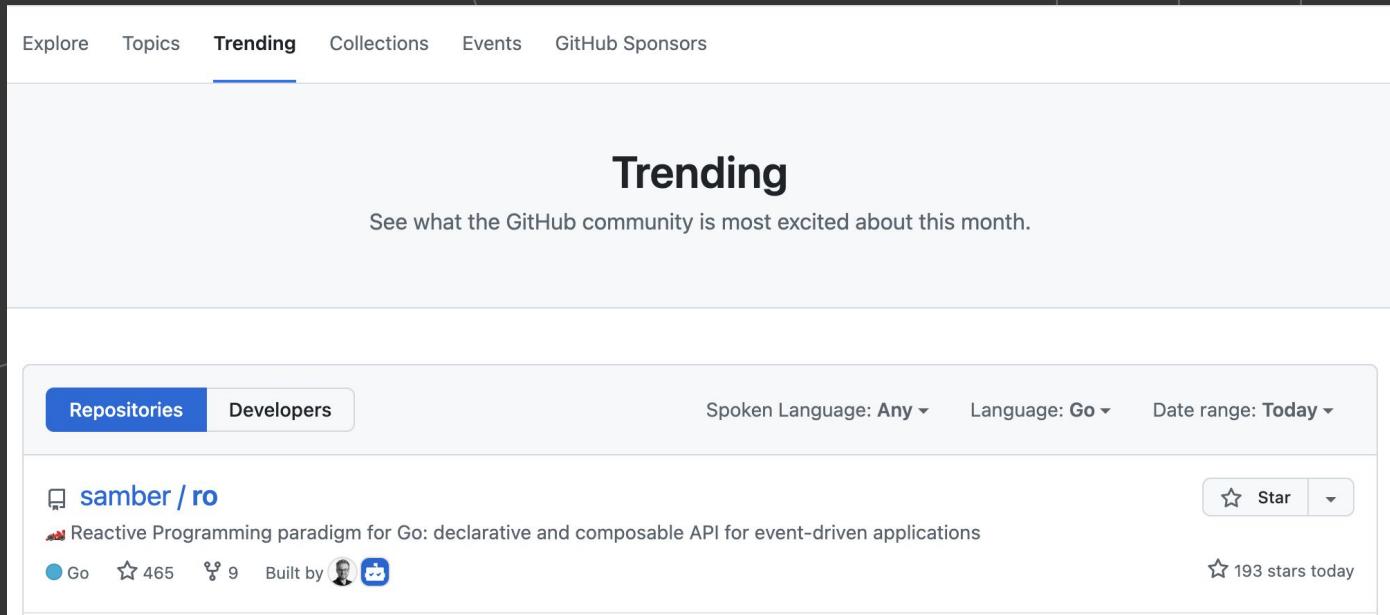
go 682 Commits

3 days ago

💥 A Lodash-style Go library based on Go 1.18+ Generics (map, filter, contains, find...)

# Social proof is powerful

# Showcase your project



The screenshot shows the GitHub homepage with the "Trending" tab selected. The main heading is "Trending" with the subtext "See what the GitHub community is most excited about this month." Below this, there's a search bar with filters for "Repositories" and "Developers", and dropdowns for "Spoken Language: Any", "Language: Go", and "Date range: Today". A specific repository card is highlighted: "samber / ro" (Reactive Programming paradigm for Go: declarative and composable API for event-driven applications). The card includes details like the language (Go), star count (465), view count (9), and build status (Built by). It also shows a "Star" button with 193 stars added today.

Explore Topics **Trending** Collections Events GitHub Sponsors

## Trending

See what the GitHub community is most excited about this month.

Repositories Developers Spoken Language: Any ▾ Language: Go ▾ Date range: Today ▾

 [samber / ro](#) 

Reactive Programming paradigm for Go: declarative and composable API for event-driven applications

 Go  465  9 Built by  

 193 stars today

Organize an artificial launch with friends and family and reach 100 stars, 1k+ views and 10+ forks ASAP, then go organic.

# Snowball (GitHub home page)

## Home

[Ask Copilot](#)

[!\[\]\(411ec2658c303cd4e18a7a50da62686f\_img.jpg\) Create a profile README for me](#)

[!\[\]\(ac2c3944a52abf3157fb446c7faa021e\_img.jpg\) Make a Pong game](#)

[!\[\]\(55d968737564fbb0937b876b0c533615\_img.jpg\) Get code feedback](#)

### Feed

**github/spec-kit** released  
1 hour ago

**Spec Kit Templates - 0.0.73**

This is the latest set of releases that you can use with your agent of choice. We recommend using the Specify CLI to scaffold your projects, however you can download these independently and manage ...

[Read more](#)

 1

# Snowball (GitHub home page)

## See also:

- [samber/lo](#): A Lodash-style Go library based on Go 1.18+ Generics
- [samber/do](#): A dependency injection toolkit based on Go 1.18+ Generics
- [samber/mo](#): Monads based on Go 1.18+ Generics (Option, Result, Either...)

 **tbourrely** starred 2 of your repositories  
yesterday

...

 **samber/mo** [!\[\]\(2e44670498490b8ac776f12edf99a36f\_img.jpg\) Star](#) ▾

Monads and popular FP abstractions, powered by Go 1.18+ Generics (Option, Result, Either...)  
 Go     3.2k

 **samber/ro** [!\[\]\(754e8deabb39c034e94580b92403d4f0\_img.jpg\) Star](#) ▾

Reactive Programming paradigm for Go: declarative and composable API for event-driven applications  
 Go     305

# Showcase your project

- Reddit (in multiple sub-reddits) / V2EX
- HackerNews
- Social networks: X, Bsky, Linkedin
- Slack/Discord communities
- daily.dev
- Get featured in newsletter
- Awesome lists
- Post comments on blog posts (medium, substack, etc.)
- Make a list of promoters (friends, contributors, etc...)

Follow the platform's rules in order to reach lots of people

# Talk to meetups, podcast and conferences

- Visibility on social media
- Youtube video
- Costly

# Content marketing

Write and publish technical posts

~~Medium~~, Substack, Hackernoon or dev.to

Use ChatGPT+Midjourney

# Add a call-to-action

Want to try? Start here: [github.com/samber/ro](https://github.com/samber/ro).

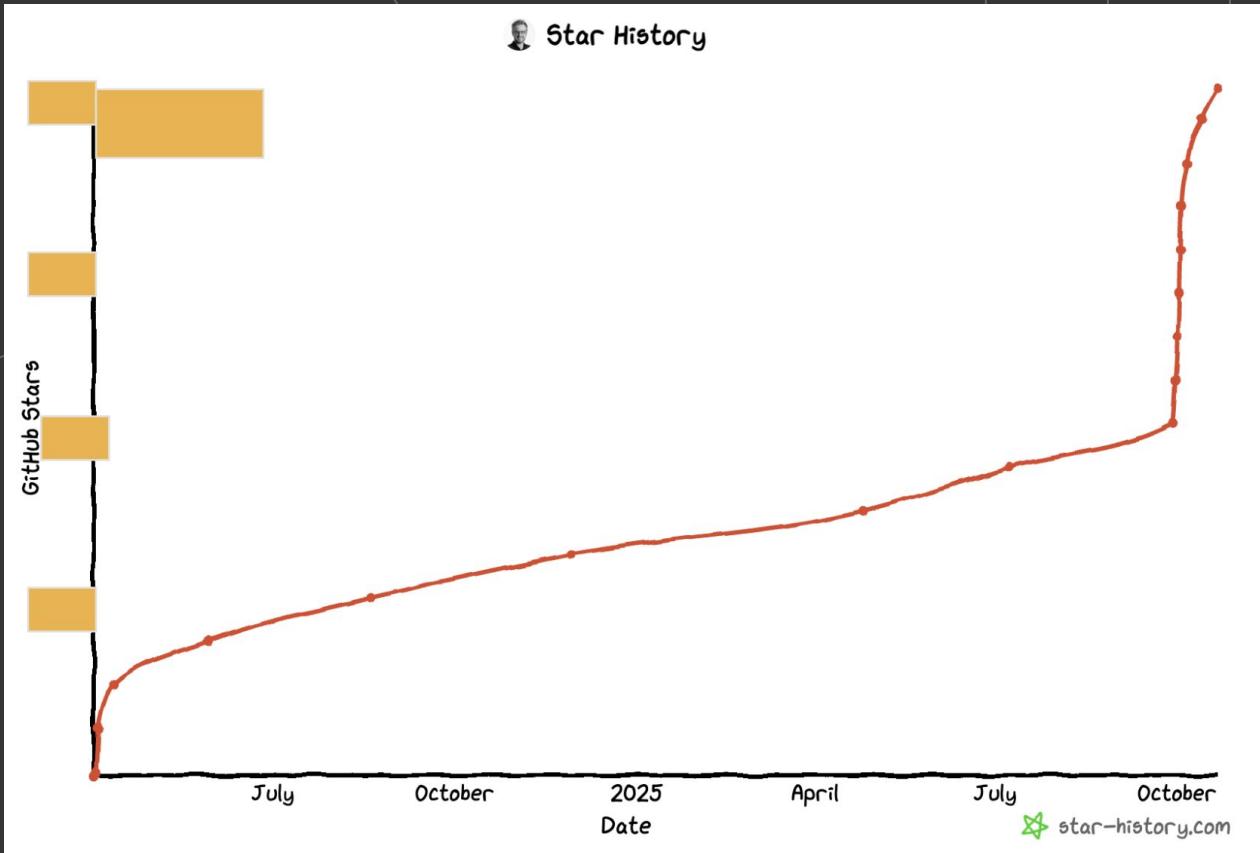
---

## Thanks!

If you enjoy my work, consider sponsoring me on GitHub. Your support helps me keep blogging and coding open-source projects  [github.com/sponsors/samber](https://github.com/sponsors/samber)

<https://samuelberthe.substack.com/p/go-beyond-goroutines-introducing>

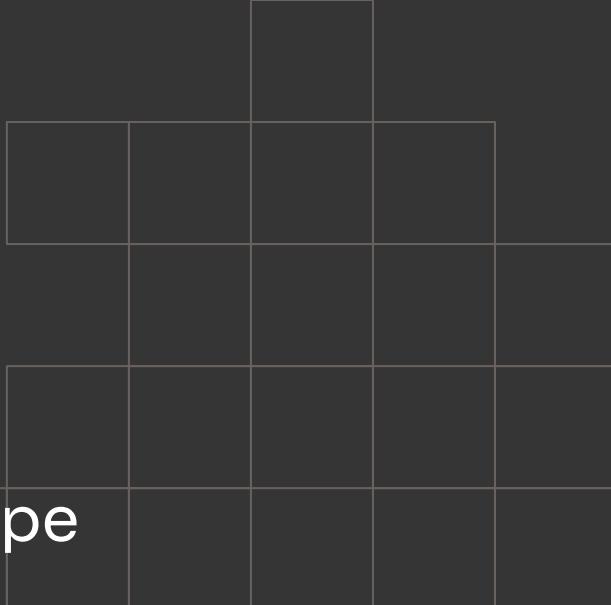
# I wrote 2 posts on Substack (end of september 2025)





Ride the wave

Take advantage of the hype  
(currently: AI)



Code examples, blog posts...

# Outbound marketing

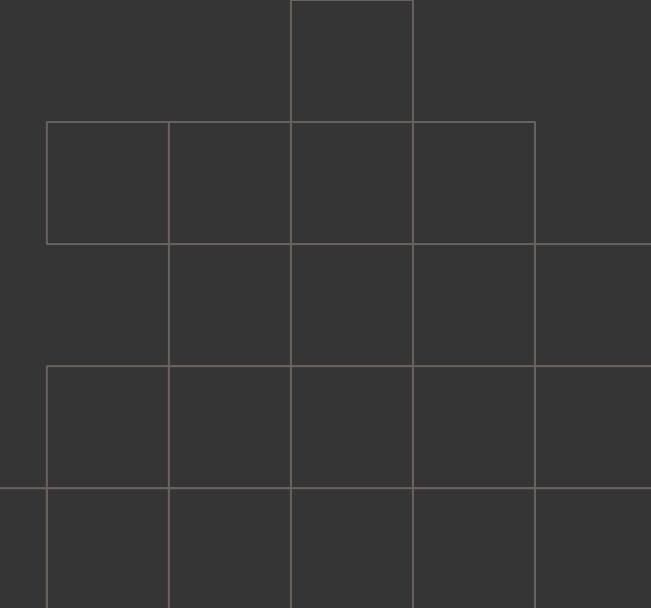
```
> git clone <similar-projects>
> git log --format='%aN,%aE' | sort -u > contributors.csv
```

```
▶ github.com/samber/lo master ✘ ▶ git log --format='%aN <%aE>' | sort -u | grep -v users.noreply.github.com
```

```
Adam Szaraniec <adam.szaraniec@wahed.com>
Adam Szaraniec <adam@wahedinvest.com>
Adrian <colid.bondzio@gmail.com>
Affan Shahid <affan.shahid.94@gmail.com>
Albert Salim <albertlimca@gmail.com>
Alex Efros <powerman@powerman.name>
Alex Klepov <alexezm@yandex.ru>
Alexandre Lamarre <alexandre.lamarre@suse.com>
Ali Sunjaya <ali.sunjaya@fazzfinancial.com>
Ali Sunjaya <ali.sunjaya@gmail.com>
Anatoly Ibragimov <metalrex100@gmail.com>
Anatoly Rugalev <anatoly.rugalev@gmail.com>
Andre Soares <andregsilv@gmail.com>
april15 <nlwkobe30@gmail.com>
Aria <aria3ppp@gmail.com>
Artem Mikheev <artemmikheev1311@gmail.com>
```



Be useful



✗ Don't spam



Share something cool

## Listen:

- Reddit
- HackerNews
- (Lobster?)
- Google Alert
- X, Bsky, Linkedin

...and enter the conversation

[Alert HN](#)[My Filters](#)[+ New Filter](#)[Settings](#)[Logout](#)

alerthn.com



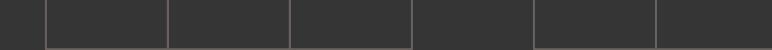
[Home](#)   [FAQ](#)   [Dashboard](#)   [Account](#)   [About](#)   [Logout](#)

F5Bot is a free service that emails you when your selected keywords are mentioned on [Reddit](#), [Hacker News](#), or [Lobsters](#). Use it to monitor your brand, your projects, or just topics that you're interested in.

# Live email alerts for Hacker News

Free email notifications for comments and posts matching custom queries.

Get notified in time to participate in the discussion!

[Sign up](#)[Log in](#)

f5bot.com

# Stars can teach you your target audience

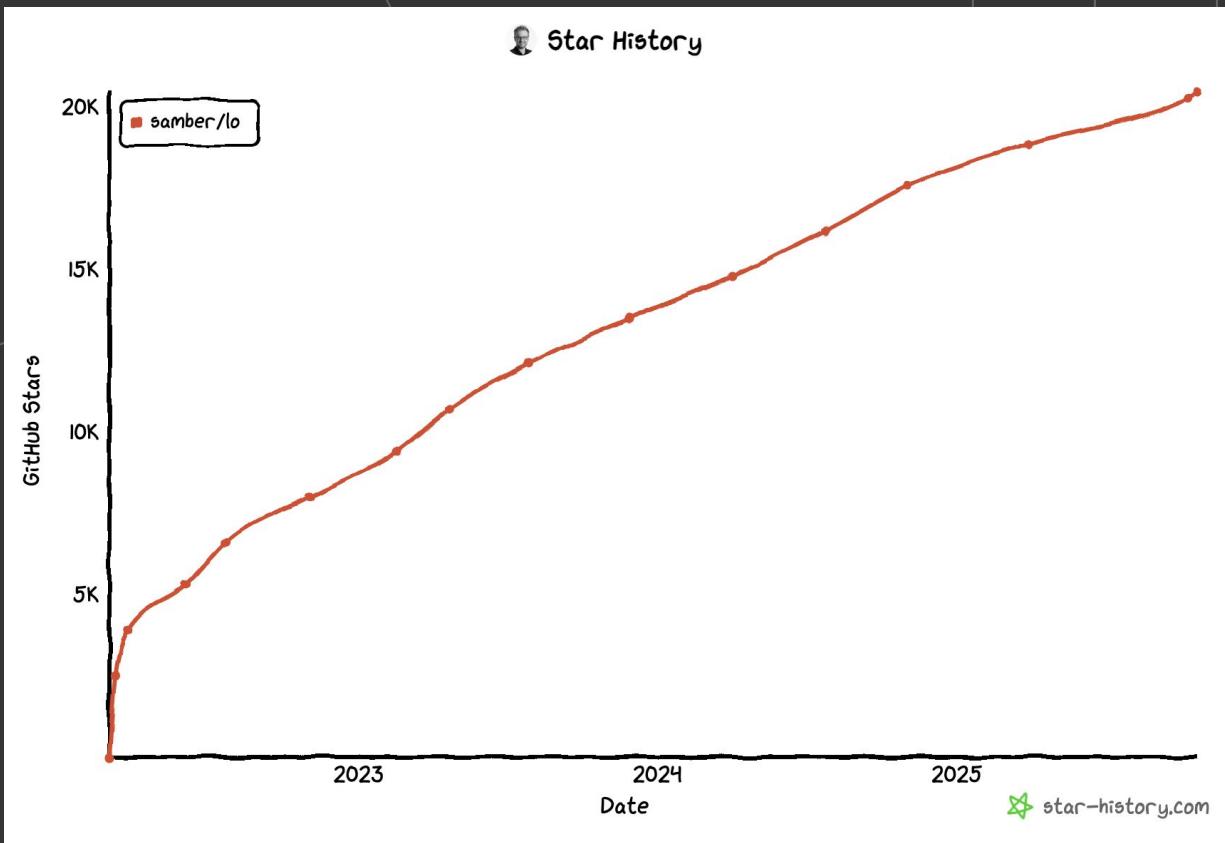
Companies, country,  
job title...

Stargazers

All 310 You know 3

 <b>burahimu</b> Bedrock Streaming <a href="#">Follow</a>	 <b>ivanopcode</b> @wildberries-tech <a href="#">Follow</a>	 <b>niel-biswas</b> 📍 Poland <a href="#">Follow</a>
 <b>chapargin</b> @neondatabase <a href="#">Follow</a>	 <b>jferri</b> @Agentero <a href="#">Follow</a>	 <b>Myzel394</b> 📍 127.0.0.1 <a href="#">Follow</a>
 <b>hslatman</b> @smallstep <a href="#">Follow</a>	 <b>avary</b> 📍 Istanbul <a href="#">Follow</a>	 <b>owais</b> @splunk <a href="#">Follow</a>
 <b>grinish21</b> Joined on Oct 12, 2015 <a href="#">Follow</a>	 <b>Batnaidan</b> Chimege <a href="#">Follow</a>	 <b>ikarius</b> Portail RSE - DORA / GIP de l'Inclusion <a href="#">Follow</a>
 <b>kalifs</b> MeisterTechnology <a href="#">Follow</a>	 <b>SaiNageswarS</b> Microsoft <a href="#">Follow</a>	 <b>broem</b> University <a href="#">Follow</a>
 <b>markusressel</b> Adesso Mobile Solutions <a href="#">Follow</a>	 <b>tbourrley</b> 📍 Lyon, FR <a href="#">Follow</a>	 <b>oanogin</b> 📍 Ottawa <a href="#">Follow</a>

# star-history.com



## Git clones

### Clones in last 14 days

1,991 Clones



... ⚙

### Unique cloners in last 14 days

168 Unique cloners

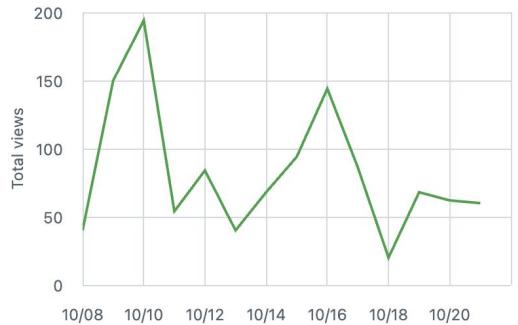


... ⚙

## Visitors

### Total views in last 14 days

1,582 Views



... ⚙

### Unique visitors in last 14 days

1,223 Unique visitors



... ⚙

github.com/samber/\*\*\*\*\*/graphs/traffic

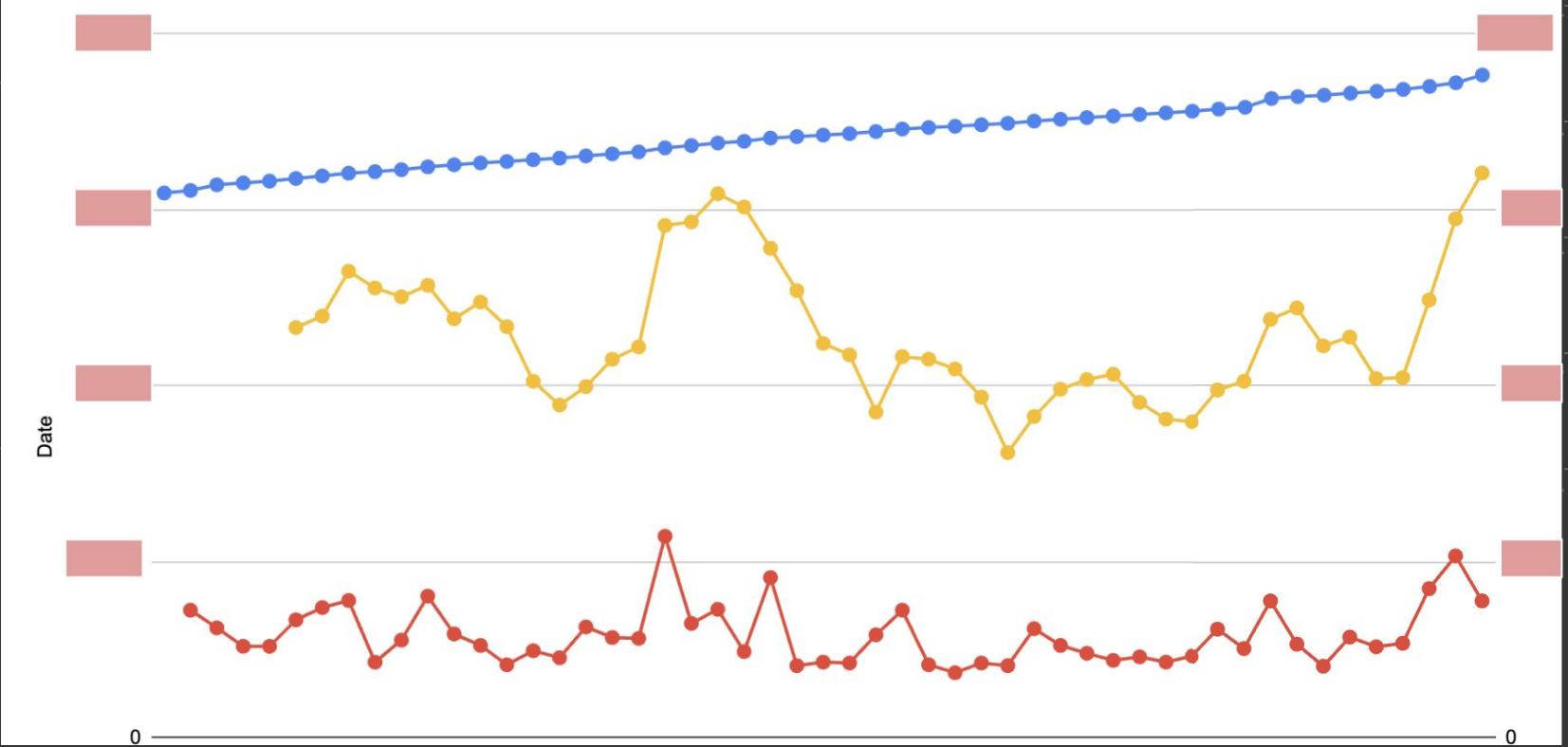
Image Window		tes	
Site	Views	Unique visitors	
 Google	2,926	1,885	
 github.com	764	431	
 stackoverflow.com	250	200	
 hub.github.com	204	100	
 t.co	156	92	
 qiita.com	106	76	
 dev.classmethod.jp	36	28	
 DuckDuckGo	30	21	
 Bing	24	23	
 news.ycombinator.com	21	19	

Popular content			
Content	Views	Unique visitors	
 <a href="#">github/hub</a>	3,635	2,497	
 <a href="#">Issues</a>	149	106	
 <a href="#">Error creating pull request: Unproce...</a>	101	74	
 <a href="#">Evaluate embedded environment v...</a>	98	72	
 <a href="#">Pull Requests</a>	79	32	
 <a href="#">cloning private repositories - Issue ...</a>	73	65	
 <a href="#">hub/etc/hub.zsh_completion at master</a>	71	51	
 <a href="#">hub/features/zsh_completion.feature...</a>	69	60	
 <a href="#">hub/lib/hub at master</a>	68	43	
 <a href="#">hub/lib at master</a>	67	45	

[github.com/samber/\\*\\*\\*\\*\\*/graphs/traffic](https://github.com/samber/*****/graphs/traffic)

## Total Stars + Stars / week + Stars / month

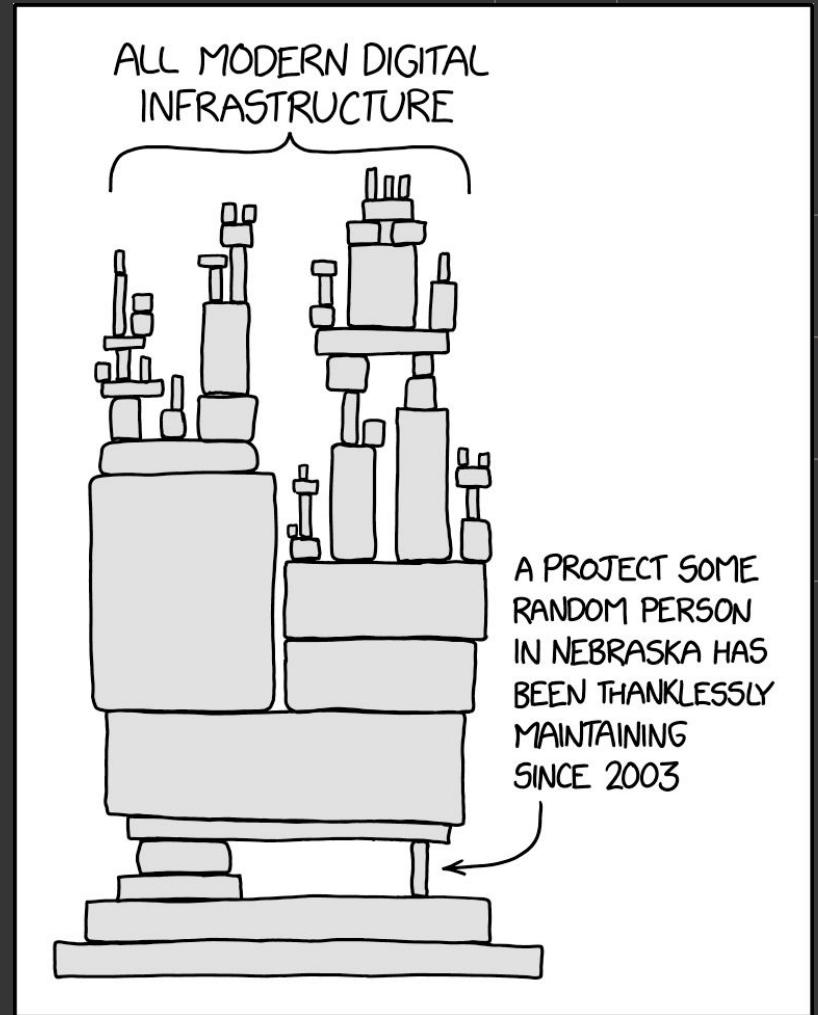


[http://docs.google.com/spreadsheets/d/1lCY63TGxvyRfI\\_A\\_QdI\\_we5YA6VuZUcB6yuFYCYHMXw/edit](http://docs.google.com/spreadsheets/d/1lCY63TGxvyRfI_A_QdI_we5YA6VuZUcB6yuFYCYHMXw/edit)

## **5- Make money**

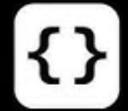
**for sustainable OSS**

# Open source != free



# OSS Sponsorship

**DRIPS**



**thanks.dev**



**PATREON**

 open collective

# Become a sponsor to Samuel Berthe



**Samuel Berthe**

samber

📍 Nantes, France

Hey! I'm Samuel

I love open source and try to give back to the community.

I create utilities that empower developers worldwide, making Go projects faster to build, easier to maintain, and more enjoyable to work with. Most of my projects originate from the needs of my own work, and I open-source them so that others can benefit as well. As a result, the majority of these projects are battle-tested and run in production.

I currently maintain:

Go toolchain:

- [samber/lo](#): A Lodash-style Go library based on Go 1.18+ Generics (map, filter, contains, find...)
- [samber/do](#): A dependency injection toolkit based on Go 1.18+ Generics
- [samber/mo](#): Monads based on Go 1.18+ Generics (Option, Result, Either...)
- [samber/oops](#): Error handling library with context, assertion, stack trace and source fragments
- [samber/hot](#): In-memory caching library

Select a tier

Monthly

One-time

\$ 20 a month

You'll receive any rewards listed in the \$20 monthly tier. Additionally, a Public Sponsor achievement will be added to your profile.

\$5 a month

Select



\$20 a month

Select



\$50 a month

Select



\$100 a month

Select



# GitHub sponsors

Sponsor this project

 **samber** Samuel Berthe

 [Sponsor](#)

[Learn more about GitHub Sponsors](#)

Current sponsors 8



Past sponsors 15



[Io / .github / FUNDING.yml](#)

 **samber** Create .github/FUNDING.yml

[Code](#) [Blame](#) 1 lines (1 loc) · 17 Bytes

```
1     github: [samber]
```

# Github Sponsorship ▶



**Samuel Berthe** <contact@samuel-berthe.fr>

to [REDACTED] ▾



Hey [REDACTED]

I just read your article on [REDACTED] and [Go logging](#). Great write-up! Thanks for referencing my libraries, slog-multi and slog-sampling.

I wanted to see if you'd be interested in a GitHub sponsorship to help promote [REDACTED] within the Go community?

For [REDACTED] \$/mo I can feature the [REDACTED] logo on all my "slog" [libraries](#), with [REDACTED] visitors per month, and drive meaningful traffic to your app.



Let me know if you'd be interested or if you have any questions.

Kind regards

Samuel

Donor

✓ Added to GitHub Invoice

What about accounting ?



For maintainer

💩 No Invoice

💩 No VAT

💩 No clear status

✓ Auto-entrepreneur

After tax: -50%



Can you live comfortably on GitHub  
Sponsors income alone?



Good luck. 😊



Otherwise, stop asking for funding  
and start a business.



# Monetize with dual-licensing

An open-source license (Apache 2.0 or MIT)

A commercial license (custom)

Lifetime license or monthly/annual license

# Dual-licensing: handle contributions

CLA (Contributor License Agreement): Contributors let you use their code.

<https://cla-assistant.io>

# Monetize with dual-licensing

Use Stripe Billing + Stripe Payment Link + n8n  
+ send key by email with unsubscription link

Sign the activation key with  
private key + expiration date

Works offline and in air gap environment



## 6- Security and hygiene

# Supply chain attack



# Limit dependencies

## Install

```
> npm i is-string
```



## Repository

❖ [github.com/inspect-js/is-string](https://github.com/inspect-js/is-string)

## Homepage

🔗 [github.com/inspect-js/is-string#readme](https://github.com/inspect-js/is-string#readme)

♥Fund this package

## ⬇ Weekly Downloads

45,192,898



# Secure your GitHub account

- MFA
- Disconnect old email addresses
- Disconnect third-party apps
- Restrict token permissions
- Restrict GitHub actions
- SSH keys with passphrase



samber / io



Type / to search



Code

Issues 125

Pull requests 87

Discussions

Actions

Security

Insights

Settings

## Security overview

Reporting

Policy

Advisories

Vulnerability alerts

Dependabot

Code scanning

Secret scanning

### Security policy • Disabled

Define how users should report security vulnerabilities for this repository

[Set up a security policy](#)

### Security advisories • Enabled

View or disclose security advisories for this repository

[View security advisories](#)

### Private vulnerability reporting • Enabled

Allow users to privately report potential security vulnerabilities

[See reported vulnerabilities](#)

### Dependabot alerts • Enabled

Get notified when one of your dependencies has a vulnerability

[View Dependabot alerts](#)

### Code scanning alerts • Needs setup

Automatically detect common vulnerability and coding errors

[Set up code scanning](#)

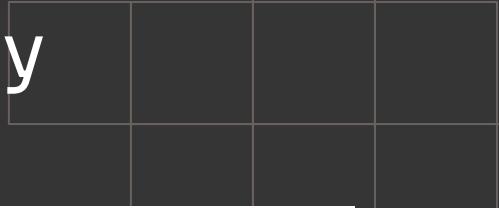
### Secret scanning alerts • Enabled

# Update dependencies



## Dependabot

# After you pass away



es

Preview

Start export

Successor settings

Learn more about account successors.

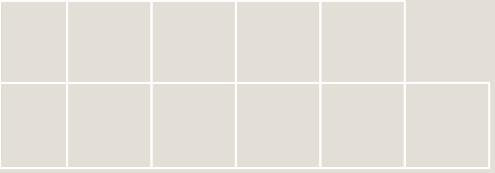
Revoke

ties

riety

Delete account

This screenshot shows a user interface for managing account successors. At the top right is a large button labeled "Start export". Below it is a section titled "Successor settings" with a sub-instruction "Learn more about account successors." A yellow emoji with heart-shaped eyes is displayed. To the right of the emoji is a "Revoke" button. At the bottom left, there are partially visible words "ties" and "riety". The main title "Delete account" is centered at the bottom in red text.



## **7- Last but not least**



## **Conclusion**

# Key takeaway

Developing an OSS project is not  
weekend side-project

But a 10y journey.

# Key takeaway

Start with a MVP and iterate

It's ok to start with a bad code quality.  
No one will notice.



Thank you !



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