

# Pure Go bindings for memif

## Internship Projects/Mentors

Title	Pure Go bindings for memif
Status	APPROVED BY TSC
Difficulty	MEDIUM

## Description

Memif is a very high performance memory based interface available in vpp or via the C libmemif. It functions by exchanging shared memory over a unix file socket, and then tx/rx-ing packets over that shared memory. libmemif exists for writing programs in C/C++ and other languages for interacting with memif. Go can bind to C via CGO, but CGO is a miserable developer experience compared to pure Go.

This project is to write a Pure Go library for interacting with memif sufficient to allow the writing of packet processors in Go that can utilize memif **without** linking in C code or using CGO.

## Additional Information

1. [Memif intro](#)
2. [Memif breakdown](#)
3. [Libmemif C implementation](#)
4. [VPP memif implementation](#)

## Learning Objectives

The intern is expected to learn:

1. Learn to use Github for SCM and Github Actions for CI
2. How to use Go to pass file descriptors over unix file sockets
3. How to write high performance memory protocols (memif in this case) over shared memory in Go
4. How to write functional and performance tests in Go, as well as build robust CI utilizing those tests
5. How to present a technical topic in a Webinar

## Expected Outcome

Deliverables:

1. Pure Go implementation of memif that can interact with existing implementations in C
2. Functional testing for the pure Go implementation of memif
3. Perf testing for the pure Go implementation of memif
4. CI incorporating both Functional and Performance testing
5. Presentation of FD.io Webinar on the pure Go memif implementation

## Relation to LF Networking

FD.io VPP utilizes memif as a high performance interface between different CNFs. The more broadly memif is adoptable, the better for VPP.

## Education Level

Undergraduate should be fine as long as they have programming experience. This projects **presumes** the ability to program generally.

## Skills

Skills in Go are highly preferred. Ability to read C code is extremely helpful.

## Future plans

Promotion to those interested in playing with packet processing in Go.

## Preferred Hours and Length of Internship

Either 40 hours a week for 12 weeks or 20 hours a week for 24 weeks are acceptable.

## Mentor(s) Names and Contact Info

Ed Warnicke - [hagbard@gmail.com](mailto:hagbard@gmail.com) - edwarnicke on the [FD.io](#) slack

Frederick Kautz - [fkautz@gmail.com](mailto:fkautz@gmail.com) - fkautz on the CNCF slack