

CapableVMs at Glasgow

We focus on **memory management** for programming language virtual machines. This is part of the larger **CapableVMs** project, which is in collaboration with King's College London.

1) warmup project

we developed a number of **simple memory allocators** for RISC-V CHERI, to help us understand some of the underlying constraints of the architecture.

These are available on github at <https://github.com/capablevms/cheri-examples> in the `example_allocators` folder, along with a [lessons learned](#) summary doc



2) first foothill project

we are now attempting a port of the [Boehm-Demers-Weiser conservative garbage collector](#) to CHERI. There are many challenges including:

- Boehm's implicit assumption that $PTR_SIZE == WORD_SIZE$
- Boehm's implicit assumption that all addressable memory is in scope and can be accessed via pointer offsets
- highly efficient pointer arithmetic to compute metadata offsets, freelist membership, etc



Watch out for our initial BDW-GC release on github soon!

3) could you collaborate with us?

- where do we need help?
... with validating the **correctness** of our CHERI memory management algorithms
- how might we help you?
... perhaps with **CHERI-appropriate memory management** implementations for your language runtime or higher-level applications

