

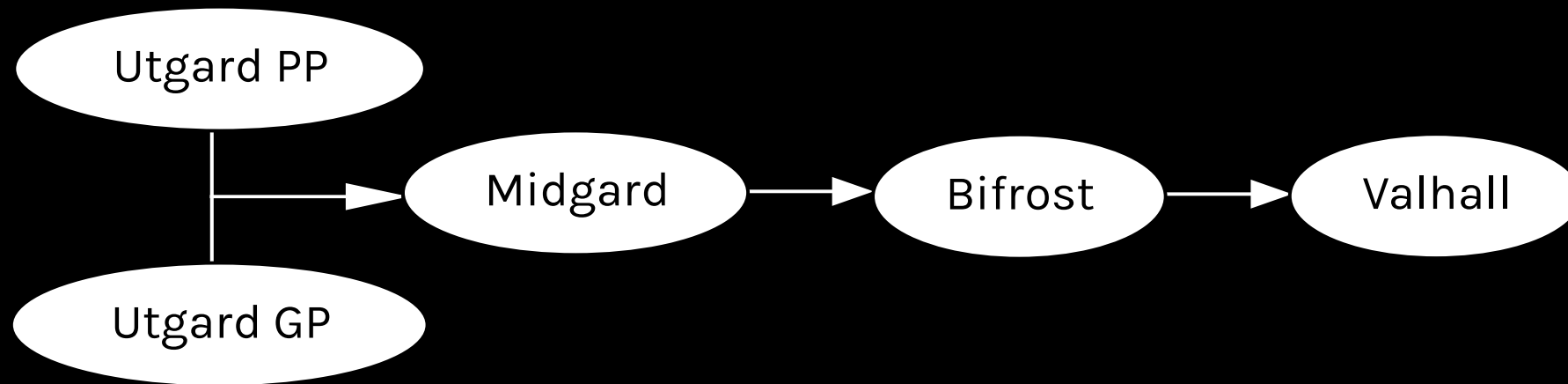
Another year, another ISA

Panfrost update

Alyssa Rosenzweig

Software Engineer

A new architecture



- Valhall is the 4th Arm® Mali™ architecture and 5th Mali instruction set.
- Implemented in the Arm® Mali™-G78, the most recently released Mali hardware.

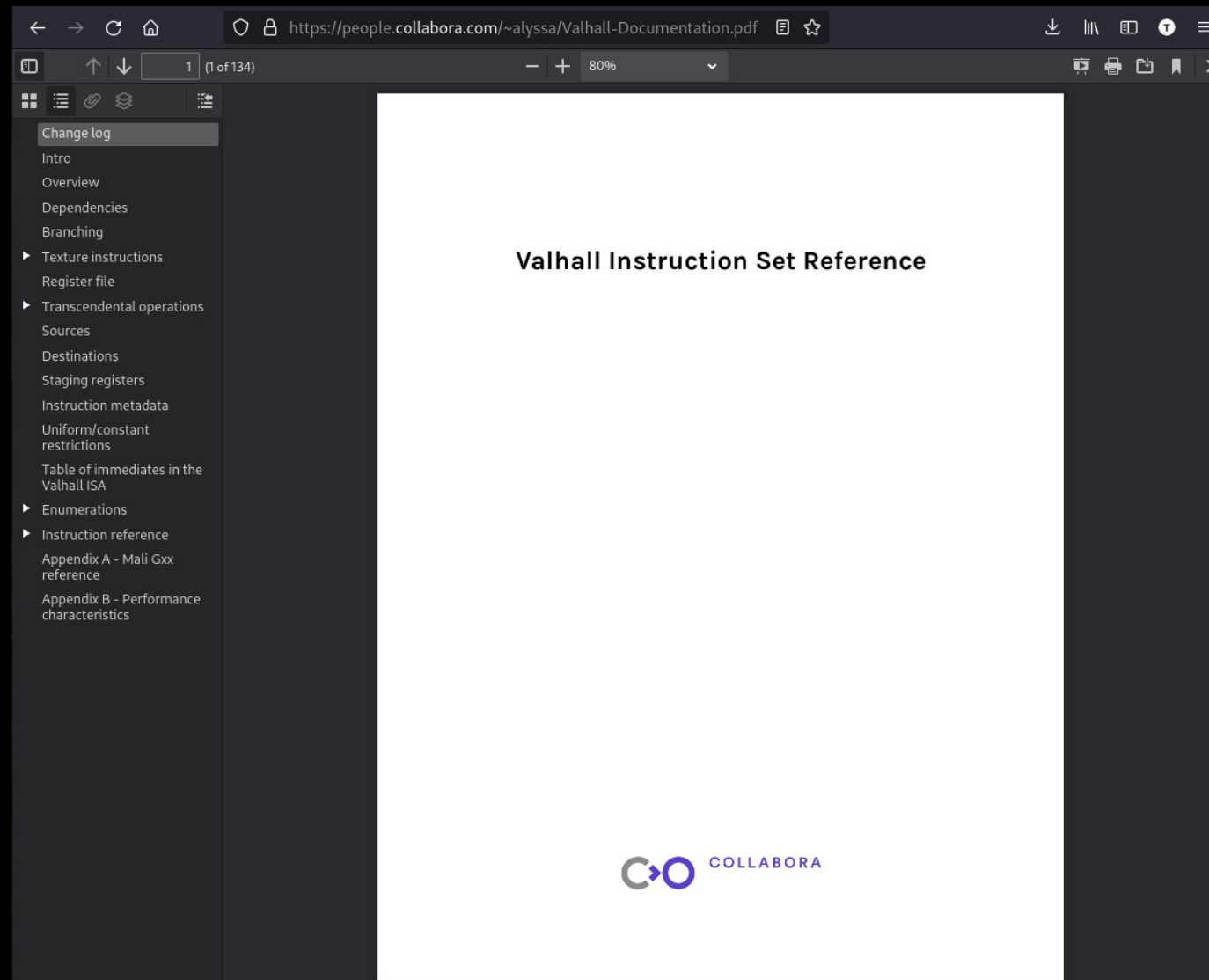
Hello Valhall

- **No documentation, no open source driver**
- Operational equivalence in instructions on old and new architecture.
- No new reverse engineering needed, only map the new encodings to the old encodings.
- Tedious job, but potential to go for perfect, not just good enough.

Mali G78, clear as a bell

- Valhall instruction set:

<https://people.collabora.com/~alyssa/Valhall-Documentation.pdf>



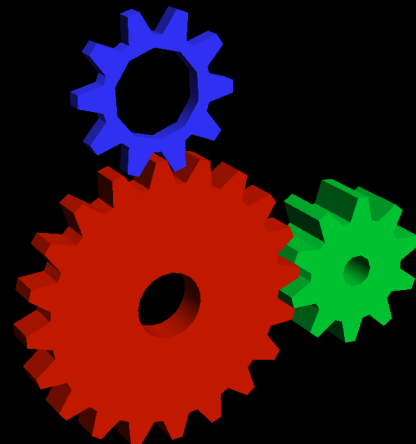
Be a great community member

- **Vallhall assembler:**

<https://gitlab.freedesktop.org/alyssa/mesa/-/blob/next-isa/src/panfrost/valhall/asm.py>

- **Vallhall disassembler:**

<https://gitlab.freedesktop.org/alyssa/mesa/-/blob/next-isa/src/panfrost/valhall/disasm.py>



Not just documentation

- **Need a full driver to be written**
- **How?**
Extend old conformant compiler, reuse instruction selection & optimization passes with very few changes.
- **Upstream soon**
Driver coming to Mesa, all open source & **no mysteries**



**Open
First**

To learn more:

<https://col.la/MaliG78>

Thank you

```
Message {
  config {
    priority: "high"
    body: "Collabora is hiring" // Many open
positions
    recipient: "you" // Please
join us
    calltoaction: "http://col.la/join"
  }
}
```