

# mea-craft

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## Features

- **RISC-V Core:**

- DIY implementation of the RV32I instruction set architecture (ISA), providing a flexible and customizable processing core.
- Uses the AXI4-Lite memory interface enabling a seamless interface with different memory devices.
- Has support for interrupts allowing the implementation of event-driven functionalities.

- **Graphics:**

- The sprite architecture presented in class, has been enhanced to enable dynamic changes to sprite contents, multiple texture scales, and memory sharing between sprites.
- Fully parametric, has support 80 sprites arranged in 5 clusters in the default configuration.

- **Memory:**

- 4 kilobytes of ROM: Storing a small boot-loader that also performs a quick test of the ISA implementation.

- 64 kilobytes of RAM: More than sufficient memory capacity to handle game, texture, and world data.
- 20.48 kilopixels of texture memory: arranged in 5 clusters of sprites.

- **Peripherals:**

- General Purpose Input/Output (GPIO) that allows the interface of the software with the buttons and switches.
- Universal asynchronous receiver-transmitter (UART) that provides a communication channel.

- **Build Tools:**

- The build and flashing process is efficiently automated by a well designed Makefile, simplifying the compilation, texture packaging, world generation, and linking tasks.
- Support for building and flashing via a single command, saving valuable development time and effort.

