mea-craft

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 bootloader 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 bulding and flashing via a single command, saving valuable development time and effort.