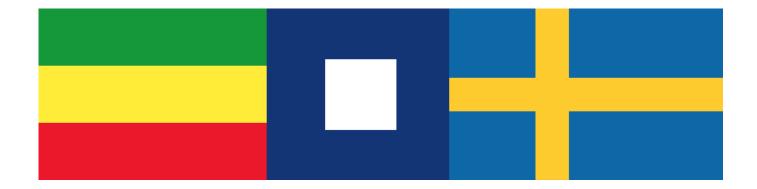**Project F**

Beginning FPGA Graphics

Published 20 May 2020 · Updated 02 Mar 2023

Welcome to *Exploring FPGA Graphics*. In this series, we learn about graphics at the hardware level and get a feel for the power of FPGAs. We'll learn how screens work, play Pong, create starfields and sprites, paint Michelangelo's David, draw lines and triangles, and animate characters and shapes. Along the way, you'll experience a range of designs and techniques, from memory and finite state machines to crossing clock domains and translating C algorithms into Verilog.

Series Outline

- Beginning FPGA Graphics (this post) - video signals and basic graphics

- **Racing the Beam** - simple demo effects with minimal logic

- **FPGA Pong** - recreate the classic arcade on an FPGA

- **Display Signals** - revisit display signals and meet colour palettes

- **Hardware Sprites** - fast, colourful graphics for games

- **Framebuffers** - bitmap graphics featuring Michelangelo's David

- **Lines and Triangles** - drawing lines and triangles

- **2D Shapes** - filled shapes and simple pictures

- **Animated Shapes** - animation and double-buffering

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