Nonlinear Dynamics in the 21st Century

The FPGA Approach

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Organization

Introduction: Block Diagram

Specifying hardware (FPGA) subsystem

Configure and compile Preloader

Configure and compile U-boot (boot loader)

Configuring and compiling Linux kernel (OS)

Compile device tree (required by Linux kernel)

Choose linux distro

Burn micro SD card

Coding Software for HPS

(Optional) Implement FPGA hardware as .rbf

Project Block Diagram

Show the block diagram and explain. Throughout the process obviously document, simulate, timing-close and perform modular debugging! Recommended that you have a linux box (on a virtual machine?) handy for cross compilation

Specifying FPGA Hardware

Refer to European documentation;talk about LWAXI, HWAXI buses; DDR3 SDRAM pin constraints; use pin planner reports to confirm proper pin assignments for HPS

The Cyclone V Boot Process

Configure and compiling Preloader

Configuring U-boot

Compiling U-boot

Configuring Linux kernel

Compiling Linux kernel

The Device Tree Binary (.DTB) file

obtained from .DTS file

Which distro?

Commands for configuring SD card

Recommended that you use 8 GB and dd

Understanding API

Loading .rbf from U-boot

Initializing your code as a .init process