Niklas Blomqvist, Philip Johansson, Matteus Laurent, Johan Levinsson,
Oscar Petersson, Erik Peyronsson

Group 41 - Design Specification

Högskoleingenjörsutbildning i datateknik, 180 hp

Introduction

Introduction (1/2 page)

The entire Design Spec should be 5-7 pages

- Now you are the engineers who receive the requirement specification. What you have to do is to propose a solution that fulfills the requirements of the system.

- Contrary to the requirements specifications, now you have to think about HOW you are going to meet the requirements.

- The design specification must describe the entire system. Think about the main blocks that your system will have, the functionality of each block and the interaction between them, i.e., which information the have to send to each other. Explain the functionality of the blocks and their interaction from a signal processing point of view, i.e., how the audio, video, etc. are processed in each block and which infomation is transmitted between blocks. You can provide som equations to show the algorithms that are applied. Note that this is very different from providing the hardware interfaces between the blocks.

- Later, think about the difficulties that you will find in hardware and the hardware limitations (timing, bandwidth, word length, etc.) and check that your design is viable. Some calculations may be necessary. For instance, if a requirrement says that the system must be able to delay the audio signal one second, you will probably think of using a memory in order to meet the requirement. Then you should make some calculations to check how big the memory must be and if it fits in the FPGA or if you need to use an external memory.

- The design specification must be described from the system level. Please, avoid details that are not relevant at that level. Also, make sure that the person who reads the document can get a clear idea of the entire system.

- As a result, the design specification must be a technical proposal that shows that you have analyzed the problem and found the difficulties that you will face, and provides a first approach to the solution. A good approach for writing the design specification is to present a block diagram of the system, provide a high-level description (at signal processing level) about the functionality of each block and how the blocks interact, and show which requirements present challenges and how you will solve them in hardware.

System Level Description

System Level Description (Block diagram + description of 1 to 2 pages).

(Make sure that your description justifies how the Requirements of your system are met, especially those that are not obvious.)

Challanges in the Design and Proposed Approach

Challenges in the Design and Proposed Approach (Main 2 or 3 challenges and proposed solutions, 1/2 to 1 page per challenge).

User Interface

User Interface (How to control the system + image visualized on the screen).