ELEN0037
Microelectronics
Tutorials

Thomas Schmitz

University of Liège - Montefiore Institute
EMMI Unit: Electronics, Microsystems, Measurements, and Instrumentation

Project Presentation

Contact information

Office: 1.81a

Mail: tschmitz@ulg.ac.be

Tel: +32(0)4 366 27 06

Web page EMMI (follow ELEN0037):
http://www.montefiore.ulg.ac.be/services/microelec/

Project Requirements

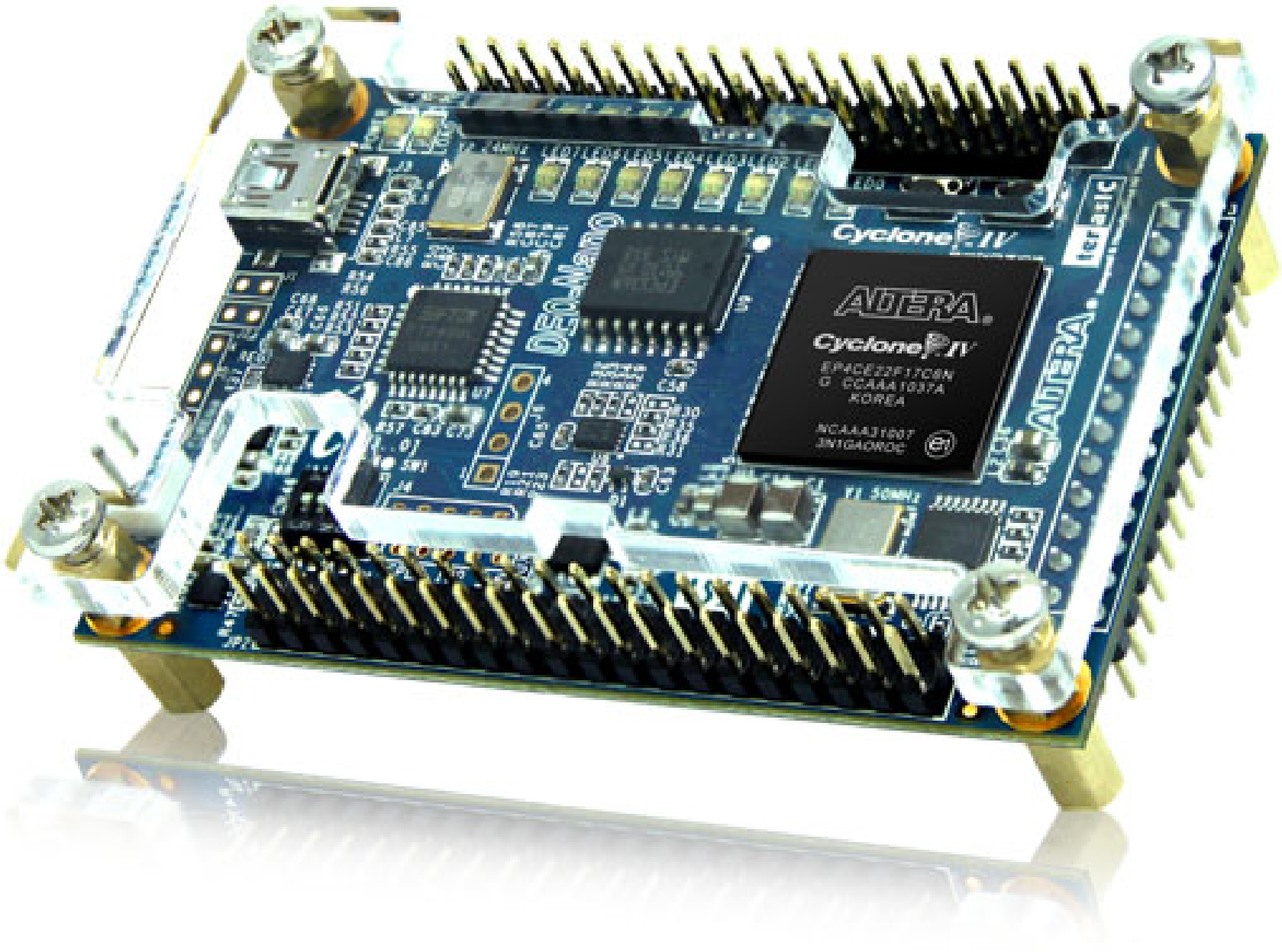
The project will be implemented on the **DE0-Nano** Development Board:

- Design of a complete video game,
- Display through the VGA custom output in order to drive a screen in 800×600 @ $72\,Hz$,
- Use of the on-board accelerometer (and any other/additional sensors of your choice),
- Implementation of a first-order digital filter (on the accelerometer outputs), with complete explanations of your implementation,
- Simulation of at least one interesting piece of VHDL code,
- Timing analysis (simple, based on the unique $50\,MHz$ clock),
- The report will be written in English.

Schedule

- Project idea: March, 21
- Final report: Mai, 2
- Project presentation: to define

DE0-Nano Development Board



vga connector

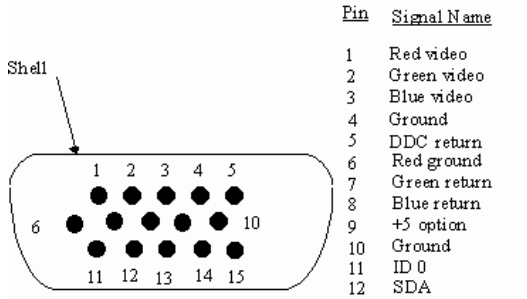


Figure 4.2.2

Pin	Signal Name
1	Red video
2	Green video
3	Blue video
4	Ground
5	DDC return
6	Red ground
7	Green return
8	Blue return
9	+5 option
10	Ground
11	ID 0
12	SDA
13	Hsync
14	V sync
15	SCL

Signal input connector as seen from the rear of the graphics card.

VGA	JP2 Header	FPGA GPIO
Gnd	12	
Red	4	GPIO_11
Green	6	GPIO_13
Blue	8	GPIO_15
Hor sync	10	GPIO_17
Vert sync	14	GPIO_19