ZipDT

TO: Avnet
FROM: ZipDT
DATE: October 30, 2012
SUBJECT: Project Status Update and Schedule

ATTN: Jim Beneke

Current Status

Since our last meeting, we have completed more research on the topics involved in our designated project and have included this information in an updated version of our background documentation. We have also taken steps to determine a schedule for the remaining time this semester. We have attached the Risk and Planning to this memo in Appendix. The document is also available on our webpage.

Future Tasks

To continue with project development we will be completing the tasks listed in the Risk and Planning document on our website. Specifically, the project has been broken into three main sections: OpenCV development, PS to PL communication, ZedBoard configuration. These tasks have been divided amongst our group members and are intended to solidify our understanding of the resources we will be using to complete the project next semester. The knowledge gained from the tasks throughout the first semester will also be applied to generating our final project specification.

Meeting Discussion Points

During the upcoming meeting on Thursday, we wish to take time to discuss the following subjects:

- Availability of training materials
- Suggestions for project development and schedule
- Overall goals for the current semester
- Recommendations for final application

Appendix

ZIPDT

Risk and Planning

Version 1.0

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10/21/2012

The purpose of this document is to list the future task in the project and rank them with their own risk level.

Task Timeline and Risk Evaluation

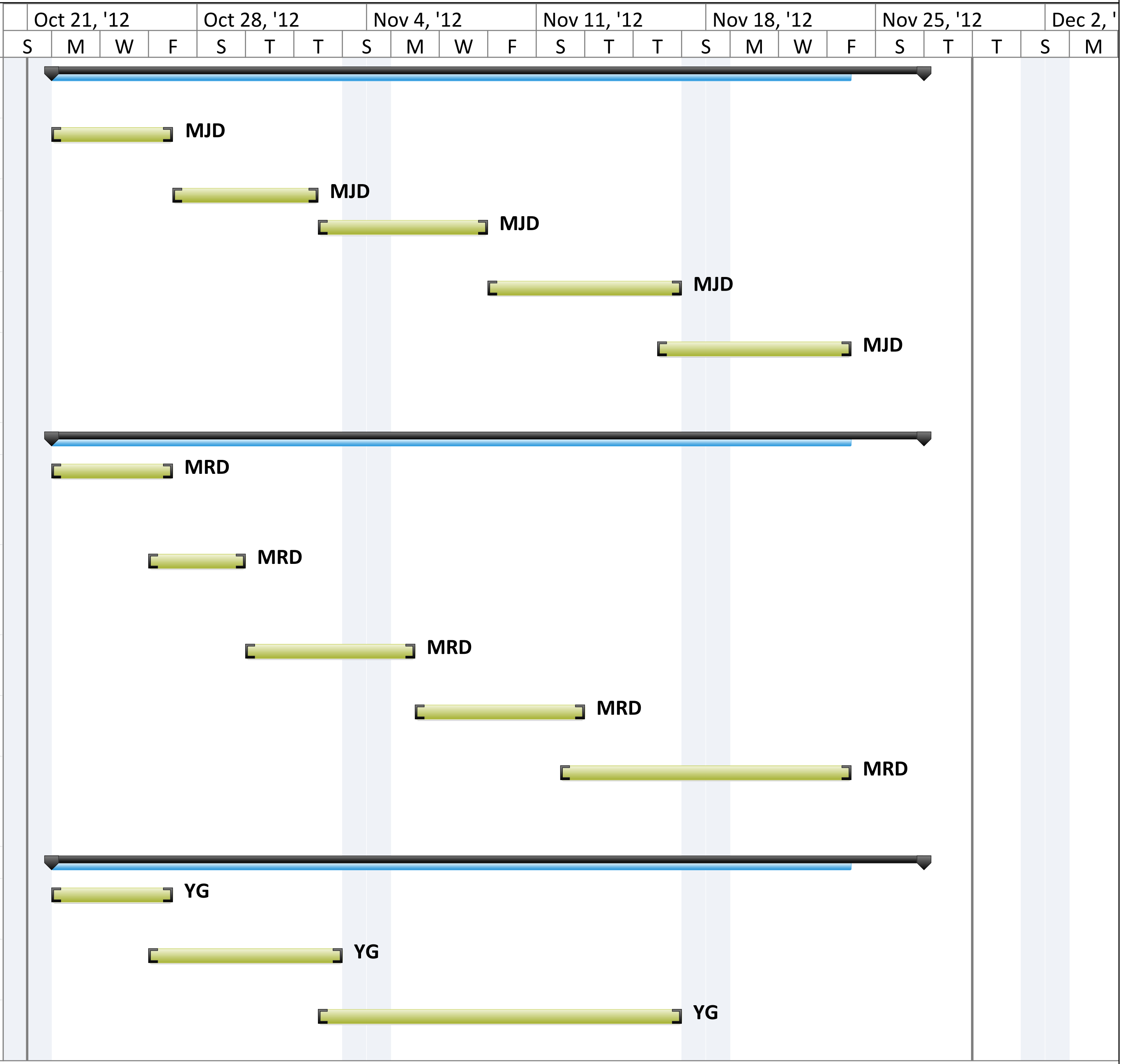
Task	Risk	Reasoning	Deliverables	Timeline	Assigned
Develop OpenCV technical prototypes	High	The development of basic programs with the OpenCV library will allow us to become more acquainted with OpenCV programming implementation and may provide some useful ideas for our image processing application	Capture image frames and store the images.	10/22 - 10/26	MJD
			Filter the images	10/27 - 11/1	
			Manipulate images (e.g. finding the color contrast edge)	11/2 - 11/8	
			Identify an object of interest and recognize its relative motion	11/9 - 11/16	
Interface software to accelerators in PL	High	In order to make the use PL to do some of the calculations of the program, sharing the data between software and hardware is important.	Research methods for sharing image memory between software and PL	10/22 - 10/26	MRD
		Demonstrate ability to successfully communicate with peripherals in the PL.	Create Xilinx Custom IP (CIP) AXI and software interface with user accessible memory.	10/26 - 10/29	
		Demonstrate functionality of dynamic CIP core.	Create CIP module that alters user accessible data.	10/30 - 11/5	
		Provide signal to software that the PL has finished task.	Introduce signalling from CIP and software.	11/6 - 11/12	
		Prove that the interface can be used to perform an image processing task.	CIP that accesses shared frame buffer and performs trivial image operation (i.e. invert image colors)	11/12 - 11/23	
Develop final specification	High	By the end of the semester, we must fully explain our image processing application to Avnet	Add significant information to our specification document concerning the	11/5 - 11/23	All

		to ensure they approve of our project design	overall function of our image processing application		
Interface USB camera with ZedBoard	Medium	Real-time manipulation of an affordable camera input is a constraint for this project. Therefore, developing an interface with a camera is an integral part of our application	Read in a stream of data from the USB camera into the ZedBoard. Display frames from camera stream on external display using OpenCV.	11/17 - 11/23	YG
Initialize Linux package on ZedBoard	Medium	This is the essential for implementing the project on ZedBoard. However, with the tutorials that will be given by Avnet the difficulty should be relatively simpler.		10/22 - 10/26	YG
Research equivalent hardware implementations to OpenCV algorithms	Medium	It is necessary to determine the difficulty required to implement specific algorithms in hardware before determining the exact nature of our project		11/16 - 11/23	MJD
Compile OpenCV code to run on the ARM architecture	Medium	We must verify that our OpenCV code is fully compatible with the ARM architecture on the Zedboard before fully committing to specific functions in the OpenCV library	Compile a simple "hello world" program to run on the ZedBoard	11/2 - 11/16	YG

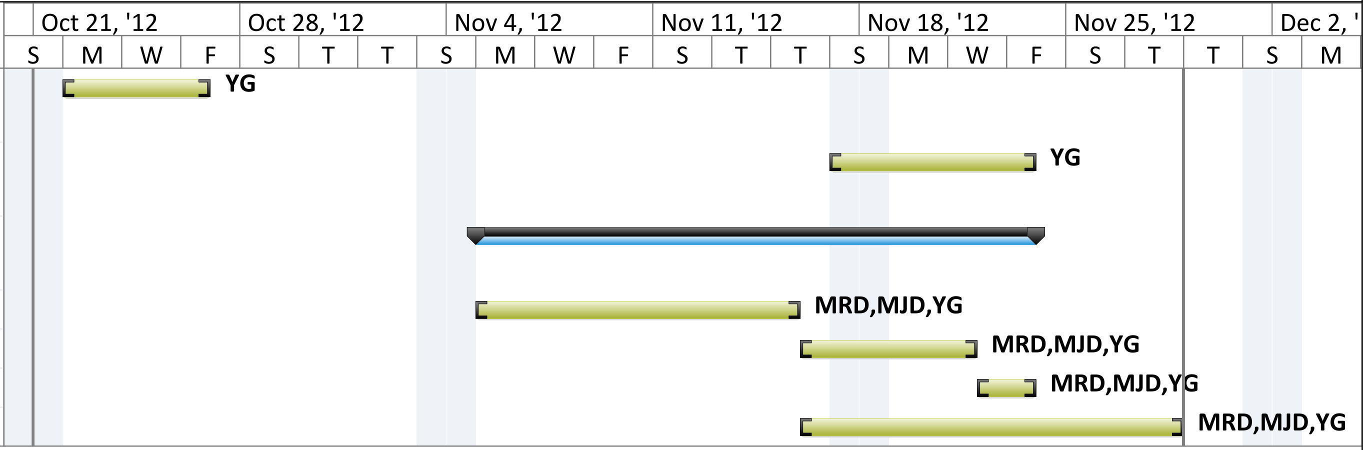
Interface ZedBoard with external display	Medium	As our project requires a system response to camera input, it is necessary to produce a visual response to the user through the use of an external display	Develop a simple program that projects a color to the display	10/26 - 11/2	YG
Determine appropriate camera for input	Low	This will allow us to perform any necessary research concerning how the individual camera communicates with OpenCV	Provide specific camera information as well as expected price	10/22 - 10/26	YG

ZipDT Task Schedule

ID	Task Name
1	**Develop OpenCV technical prototypes**
2	Capture image frames and store the images
3	Filter the images
4	Manipulate images (e.g. finding the color contrast edge)
5	Identify the interest object and recognize its relative motion
6	Research equivalent hardware implementations to OpenCV algorithms
7	**PS PL Communication**
8	Research methods for sharing image memory between software and PL
9	Create Xilinx Custom IP AXI and software interface with user accessible memory
10	Create CIP module that alters user accessible data
11	Introduce signalling from CIP and software
12	CIP that accesses shared frame buffer and performs trivial image operation
13	**ZedBoard**
14	Initialize Linux package on ZedBoard
15	Interface ZedBoard with External Display
16	Compile OpenCV code to run on the ARM architecture



ID	Task Name
17	Determine appropriate camera for input
18	Interface USB camera with ZedBoard
19	**Develop final specification**
20	First Draft
21	Second Draft
22	Final
23	Final Presentation


Oct 21, '12
Oct 28, '12
Nov 4, '12
Nov 11, '12
Nov 18, '12
Nov 25, '12
Dec 2, '
S M W F S T T S M W F S T T S M W F S T T S M
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