#### Title

FPGA-Based Design and Implementation of a Controller for a Dual-Axis SunTracking System

### **Problem Statement**

Two major factors affect the efficiency of solar panels: the PV cell efficiency, and the intensity of sun rays received on the surface of the panel. Increasing the size of solar panel is the trivial solution to increase its efficiency, however, this is a costly solution. This project will try to increase the efficiency of solar panels by developing an efficient and cost effective sun tracking system. The sun tracking system will try to keep the intensity of the sun rays hitting the solar pane as high as possible, which will increase its efficiency.

#### Outcome

Efficiently working sun tracking system that will reduce the size needed for the solar panels used on Rawabi United gas detection systems.

## **Requirements (Tentative)**

- FPGA based solution.
- Higher efficiency and lower cost than traditional solutions.
- Increases a solar panel's electricity production at least by an average of 20%

#### Advisor

Dr. Aiman El-Maleh

#### Team

- Member 1: Murtadha Al-Saeedi, 200990530.
- Member 2: To be decided.

## Timetable (Tentative, Sub-tasks will be added)

GANTT S	<b>~</b>	$\leq$	2014		Adopting	a Solution	Approval	l of Controlle	er Approval	of System	Design Pro	posal		First Full	System Pre	totypeking	Bun Tracking	3 Systemk
Name Be	egin date	End date	Week 37 9/7/14	Week 38	Week 39	Week 40	Week 41		Week 43	Week 44	Week 45	Week 46	Week 47		Week 49	Week 50		Week 52
<ul> <li>Literature Survey of Exi 9/8</li> </ul>	8/14	9/14/14		<b>.</b>														
<ul> <li>Evaluation of Different 9/1</li> </ul>	15/14	9/21/14			L.													
<ul> <li>Adopting a Solution</li> <li>9/2</li> </ul>	22/14	9/22/14			•													
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Development of the Su 11	/3/14	11/16/14										_	<b>_</b> _					
Integrating the Controll11	/17/14	11/23/14											<u> </u>	<u> </u> t				
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Testing Correct Functio11	/24/14	11/30/14												Ľ	1			
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<ul> <li>Performance Study 12</li> </ul>	/8/14	12/14/14																
Project Efficiency Results 12	/15/14	12/15/14															•	

# Sun Flower (Sun Tracking System Project)

Sep 9, 2014

Project manager<br/>Project datesMurtadha<br/>Sep 8, 2014 - Dec 15, 2014Completion<br/>Tasks<br/>Resources0%1616

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# Tasks

Name	Begin date	End date
Literature Survey of Existing Solutions	9/8/14	9/14/14
Evaluation of Different Solutions	9/15/14	9/21/14
Adopting a Solution	9/22/14	9/22/14
Design Proposal of the Sun Tracking Controller	9/22/14	10/5/14
Approval of Controller Design Proposal	10/6/14	10/6/14
Design Proposal of the Sun Tracking System	10/6/14	10/19/14
Approval of System Design Proposal	10/20/14	10/20/14
Development of the Controller	10/20/14	11/2/14
Development of the Sun Tracking System	11/3/14	11/16/14
Integrating the Controller and the System	11/17/14	11/23/14
First Full System Prototype	11/24/14	11/24/14
Testing Correct Functionality of the System	11/24/14	11/30/14
A Correctly Working Sun Tracking System	12/1/14	12/1/14
Determining Performance Measures	12/1/14	12/7/14
Performance Study	12/8/14	12/14/14
Project Efficiency Results	12/15/14	12/15/14

2

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R	lesources		3
	Name	Default role	
	Murtadha	project manager	

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# Gantt Chart

GANTT -	$\succ$	$\rightarrow$	2014		Adoptin	g a Solution	Approval	of Controlle	er Approval	of System	Design Pro	posal		First Full	System Pr	ototype	Project Ef	fficiency Re
project			Week 37	Week 38		Week 40							Week 47	Week 48	Week 49	Week 50	Week 51	Week 52
Name	Begin date		9/7/14	9/14/14	9/21/14	9/28/14	10/5/14	10/12/14	10/19/14	10/26/14	11/2/14	11/9/14	11/16/14	11/23/14	11/30/14	12/7/14	12/14/14	12/21/14
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A Correctly Working Sun	.12/1/14	12/1/14													4			
Determining Performanc	12/1/14	12/7/14													Ľ	-		
Performance Study	12/8/14	12/14/14														<u> </u>		
Project Efficiency Results	12/15/14	12/15/14																

4

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