

# Lab 6. system Enhancement

## I. Purpose

The purpose of this lab is to perform system enhancement on RoboCam. You define your own small project of system enhancement, and experience progress of the project.

## II. Progress Summary of System Enhancement Project

System enhancement is typically progressed step by step as follows.

Step 1. Define your own small project on system enhancement of RoboCam.

Step 2. Write technical specification of your system enhancement.

Step 3. Design your own hardware and software.

Step 4. Submit your Proposal of System Enhancement as Pre-report, including topic, technical specification, and design.

Step 5. Implement and test your own hardware and software.

Step 6. Documentation.

Step 7. Perform Demonstration to TA.

Step 8. Presentation to Students.

## III. Steps of System Enhancement Project

### Step 1. Define your own small project on system enhancement of RoboCam.

Select topic:

Propose your own enhancement on RoboCam containing purpose

Browse the original specification described in Intro Section.

Suggest what can be improved.

Write:

Topic: your system enhancement

Paragraph: Explain your system enhancement.

### Step 2. Write technical specification of your system enhancement.

In technical specification, explain capability of your system enhancement with specific numbers.

### **Step 3. Design your own hardware and software**

Note. Clear design clearly helps system implementation and test easy.  
Divide functionality into hardware and software.

#### ***Hardware:***

Lab equipment used so far can be used in this Lab also.

You can use components provided in this Lab and additional components stocked in EE.  
Ask Technical staff whether required component is stocked.

Additional parts may be purchased by yourself (at your own expense for quicker delivery)  
Minimize additional components to purchase.

#### ***Software:***

Be sure that implementation does not require much time.

### **Step 4. Prepare your Proposal for Enhancement**

Summarize Steps 1 to 3 to write your own proposal [as your pre-report].

#### ***Contents of Proposal***

Topic

One sentence, Bold.

Project Members: Name, Student id, Phone, Email.

1. Problem Statement

One paragraph describing objective of your system enhancement.

2. Enhanced Technical Specification

Improved/enhanced specification on RoboCam.

3. Design (Initial)

Block diagram showing hardware/software components.

Required hardware & additional components.

Required Software.

### **Step 5. Implement your own hardware and software**

#### ***Hardware***

Connect or solder your additional components.

Test functionality.

#### ***Software***

Edit, compile, and debug.

Test with various conditions

In some cases, you may go back to Step 3 to Redesign hardware or software

### **Step 6. Documentation**

Can be done parallel with Step 5.

### **Step 7. Demonstration**

Demonstrate the functionality of your enhancement To TA

***No Final Report is required.***

### **Step 8. Presentation**

To students, TA, professor in this course

Use powerpoint, and Present in English.

#### ***Contents of Presentation [PPT]***

Cover page:

Topic

Project Members: Name, Student id, Phone, Email.

1. Topic  
One sentence, Bold.
2. Problem Statement  
One paragraph describing objective of your system enhancement.
3. Enhanced Technical Specification  
Improved/enhanced specification on RoboCam.
4. Design (Final)  
Block diagram showing hardware/software components.  
Required hardware & additional components.  
Required Software.
5. Technical Explanation (if required)
6. Implementation Result
7. Conclusion and further work
8. References

Note. Suggestions for improvement on RoboCam are welcome. Each student should email suggestion to professor.

***Patience is bitter, but the fruit is sweet.***