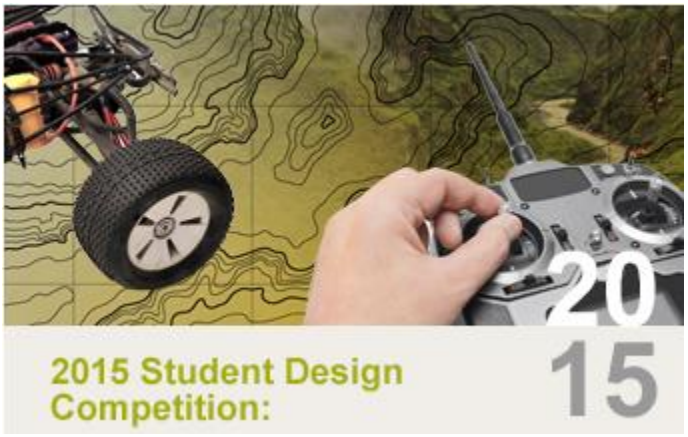
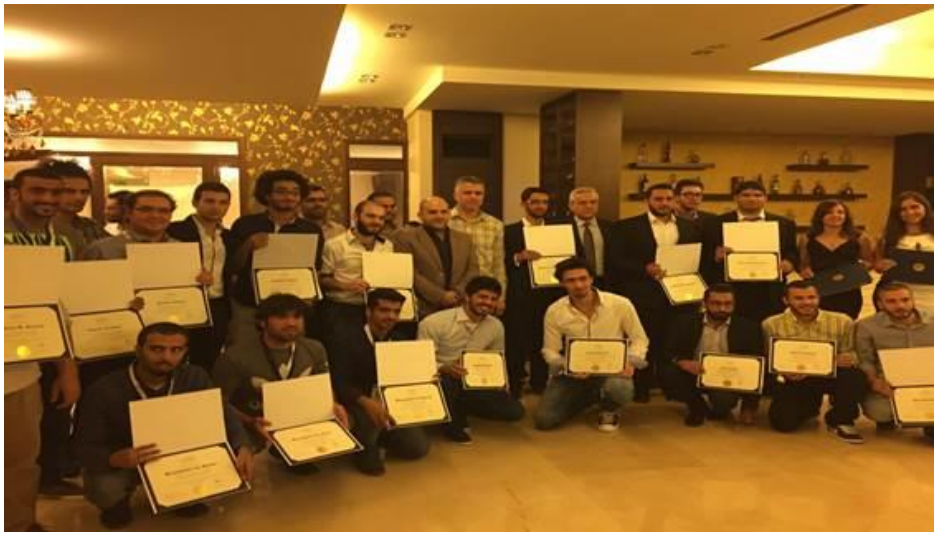
The American Society of Mechanical Engineers (ASME)
Student Design Contest - Robots for Relief





In February 2015, ASME PMU Branch won second place in ASME Regional Student Design Competition at Beirut, Lebanon. The team was qualified to participate in the final competition held at Houston, Texas, U.S.A. The project was about designing the best operating robot to be used for rescue and relief mission in case of disaster.

At Houston, PMU students won the sixth place among top sixteen universities from the Middle East, North and South America, Europe, Pakistan and India. Moreover, they got the best score among three other Arab Universities qualified for the finals (Rafic Hariri Lebanese University and British University in Egypt).

ROBOT FOR RELIEF

INTRODUCTION

As the world moves toward a new technology, the robots have become an important area of interest for research and development. The function of robot is to convert the orders to a real physical operation, by means of moving the mechanical parts of the robots to do a specific order and are designed to operate at specific job and area. Therefore, robots play a major role in new technology, especially in factories, military and medical. However, robots can convert the orders into mechanical power that can be used for a variety of activities like moving parts.

OVERVIEW

The ASME team students at the Mechanical Engineering Department were engaged in the ASME Competition to design and developed a scaled-down version of a transporter capable of delivering granular materials, which will be guided by one person, at the most.

They participated in the Robot student design competition that was held at Beirut, Lebanon (NDU: Notre Dame University). ASME team had worked on building the robot, and was finalized before the deadline. The competition was in Lebanon (April 24-26, 2015). After getting the second place PMU-ASME team were qualified for the final competition which was held in USA (Texas, November 2015).

OBJECTIVES OF THE PROJECT

Delivering aid, including clean water, food, fuel, and medical supplies to places, such as the Philippines after Typhoon Haiyan, is a difficult task, as transporting bulk materials over uneven and rough terrain, in tight spaces, and over long distances is often required to help those in need.
The challenge was to design and develop a scaled-down version of a transporter capable of delivering granular materials, which will be guided by, at most, one person.

PROJECT SUPERVISORS

1. Dr. Nader Nader, Assistant Professor at PMU
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PMU STUDENTS WHO CONTRIBUTED IN THE PROJECT

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THE PHASES OF THE PROJECT

The following are the major phases of this robot project:

1. Studying in detail robotic movement
2. Studying in detail robotic control
3. Designing the robot analytically
4. Manufacturing of robot-designed components
5. Installing and setting up the designed components

PROJECT SCHEDULE

MAJOR ACTIVITIES	WEEK 1				WEEK 2				WEEK 3				WEEK 4			
LITERATURE REVIEW																
STUDY OF ROBOTIC MOVMENT																
STUDY OF ROBOTIC CONTROL																
DETAILED DESIGN AND DESIGN MODELLING																
PROCUREMENTS																
MANUFACTURING																
SYSTEM INTEGRATION																
FINAL TESTING																
PROJECT REPORT AND PRESENTATION																