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3rd Undergraduate Research Experience Program (UREP) Competition winners

03/23/2011

A project about "Down Syndrome in Qatar" takes the first place in the competition

- Eight research projects compete in final round of the 3rd competition
- Qatar National Research Fund (QNRF) supports outstanding students

Doha, Qatar. March 23, 2011 - Qatar National Research Fund (QNRF) announced the results of the 3rd Undergraduate Research Experience Program (UREP) competition which was held this year under the auspices of Dr. Saif Al Hajari, Vice Chairperson of Qatar Foundation's Board of Directors. 15 students were awarded in this competition. The prizes were as follows:

1st place : QAR10,000 for each student and QAR15,000 for each faculty member

2nd place: QAR7,000 for each student and QAR10,000 for each faculty member

3rd place: QAR5,000 for each student and QAR7,000 for each faculty member

Dr. Amer Al Saady, Advisor research, Qatar Foundation and Dr. Abdul Sattar Al-Taie, Executive Director, QNRF handed the prizes and the certificates to the winners. First place went to the project submitted by Abdulhadi Al-Saei, Sanah Sadiq and Arnab Chowdhury, supervised by Dr. Pablo Rodriguez del Pozo from Weill Cornell Medical College - Qatar, titled Down Syndrome in Qatar: A Survey of Public Perception and

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Educational Resources

Second place went to the project submitted by Kareem Baksh, Ali Ibrahim Behaih, Viqas Malik, Abdullah Jabbar, Muhammad Shamsul Huda, Samahat Samim, Marco Van Der Merwe, Adel Ahmed , Paulo Sane supervised by (Dr. Ovais Murtuza, Dr. Tanveer Sayeed and Dr. Luay Hussein) from (College of the North Atlantic - Qatar), titled Green Home: Sustainable energy management and home automation

Third place went to the project submitted by Sharmeen Ibrahim, Heba Khayal and Noor Al-nakhala, supervised by Dr. Tarek El Fouly and Dr. Dr. Amr Mohamed from (Qatar University), titled An Intelligent Traffic Light Control System for Ambulance Use

In this 3rd competition, the final reports of 74 research projects, funded by QNRF through UREP in its various cycles and submitted in 2010 were subject to careful review and strict evaluation by a team of experts. They were eliminated through two rounds until eight reports reached the final round of the competition during which a representative of each team gave a presentation of their research project in front of the judging panel. Thirty seven students, supervised by fourteen professors, participated in carrying out these eight projects.

Engineer Issa Al Mohannadi, Chief Executive Officer of Doha Land, chaired the competition's judging panel which included Eng. Ahmed Salman Ali Al-Sulaiti, Manager of the National Network infrastructure, ICT Industry Development, Dr. Jaouad Alkhaliki, Director of Consulting Services at MEEZA, Dr. Osama Noujoum, economist at the General Secretariat for Development Planning at the Council of Ministers, in addition to Ms. Samira al-Qassmi, Managing Director at Shafallah Center.

The researches which reached the final round of this year's competition are notable for their strong link to the priorities of the scientific research in Qatar despite the variety and diversity of the research topics starting from the design of the intelligent traffic signals, urban planning and green building projects to the phenomenon of domestic violence and the creation of a complete guide to the nation's archaeological sites.

In UREP, students participate in research projects under the supervision of faculty members and professional researchers and obtain financial support from QNRF for activities beyond the scope of their yearly academic program.

The goal of this program is to promote the culture of scientific research and provide hands-on learning opportunities. The students, on their part, benefit by becoming familiar with different scientific research methods while undergraduates and thus acquire specialized skills from which they benefit in their professional future. In the field of research, where the present leap forward in Qatar requires qualified human resources, this is considered an essential element to the realization of the desired goals.

Program (NPRP)

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Below is a brief summary of the three winning research projects round:

First place:

Title: Down Syndrome in Qatar: A Survey of Public Perception and Educational Resources

Student Presenter: Abdulhadi Al-Saei

Other participating students: Sanah Sadiq, Arnab Chowdhury

Primary Faculty Member: Dr. Pablo Rodriguez del Pozo

Institution: Weill Cornell Medical College - Qatar

ABSTRACT

Anecdotal evidence suggests that the social attitude towards children with Down syndrome is frequently marked by ignorance towards the nature of the condition. Hence, this study was aimed to derive information about the society's perception of children with Down syndrome and the perception of the families of children with Down syndrome regarding social attitudes towards their children and possibilities of social integration of these children. To accomplish these aims, a public random survey was conducted on a 300-people sample to study the attitudes of the general public about children with Down syndrome. Additionally, a family survey was conducted among parents of children with Down syndrome, to obtain information about their perceptions of people's attitudes towards their children in Qatar in different settings.

The results of the study were categorized based on age and gender. There were significant gender differences in the awareness about Down syndrome: For example 30% of women claimed having studied about DS, while the number was only 18% among men; 30% of women were aware of the incidence of DS compared to just 2% of men who knew the correct incidence. Regarding the social acceptance of children with Down syndrome, regrettably, 41%, 42% and 57% of participants in age groups 18-25, 26-40 and over 40 years responded that they would not encourage their kids to play with children with DS. And worryingly, 42% of all respondents believed that children with Down syndrome are prone to misbehavior and aggression. In the family survey, 28% of the parents agreed revealed that the general reaction is usually apprehensive. Moreover, about 28% of parents were dissatisfied with the reaction of the public in shopping malls.

As a general conclusion, the study found that there is a need to spread awareness about children with Down syndrome, so that people are aware of the needs and capabilities of children with Down Syndrome and therefore, to allow their better integration into society.

Second place: Title: Green Home: Sustainable energy management and home automation

Student Presenter: Kareem Baksh and Ali Ibrahim Behaih

Other participating students: Viqas Malik, Abdullah Jabbar, Muhammad Shamsul Huda, Samahat Samim,

Marco Van Der Merwe, Adel Ahmed , Paulo Sane

Primary Faculty Member: Dr. Ovais Murtuza

Faculty Member (s): Dr. Tanveer Sayeed, Dr. Luay Hussein

Institution: College of the North Atlantic - Qatar

ABSTRACT

Since the Industrial Revolution, a significant increase of greenhouse gas concentration has led to an alarming rise in the earth's average temperature. However, despite the awareness and desire to curb global warming, demand for energy consumption has grown exponentially.

Rapid growth in the State of Qatar is a microcosm of this global phenomenon. The current challenges faced in Qatar are a lack of sustainable resource management and inefficient home designs. "Green Home" is a revolutionary project, which proposes inexpensive alternatives to current practices in the home construction industry. It is a solution designed to address the above stated problems. The goal is to encourage "green-friendly" living for Qatari residents.

An existing villa in Qatar was the focus of this study. Students at CNA-Q, under the direction of the engineering faculty, studied the electricity and water usage of this existing villa. They calculated all the lighting, HVAC and water loads of the existing system. The same villa was then analyzed theoretically for energy savings using home automation technologies, energy efficient lighting and HVAC systems. A comparative study was done between the Old Current System (OCS) and the New Proposed System (NPS). In this comparative study, the NPS is a theoretical model, incorporating new energy technologies.

A small scale model of the existing villa was created. In this model, home automation and water management systems were installed and tested for functionality. The primary function of this small scale model is for the illustration of the functionality of the NPS. The entire model was powered by solar energy.

Results of the theoretical comparative study showed significant energy savings, when compared to the operation of the real villa. Using the suggested improvements the NPS uses 70% less energy for lighting and 45% less energy for HVAC than the OCS. These savings are calculated and compared for a "typical year" per villa.

The project has now progressed to the next phase. The villa studied is currently being retrofitted with automation and energy efficient devices and an energy audit is being conducted. The final goal is to construct a green villa from its foundation utilizing this study as a benchmark while designing and building this green villa. Significant work is currently being conducted in partnership with Qatar Green building council.

Third place:

Title: An Intelligent Traffic Light Control System for Ambulance Use

Student Presenter: Sharmeen Ibrahim Other participating students: Heba Khayal, Noor Al-nakhala

Primary Faculty Member: Dr. Tarek El Fouly

Faculty Member (s): Dr. Amr Mohamed Institution: Qatar University

ABSTRACT

The intelligent traffic light system is a project that provides an automatic system for traffic lights control that makes a green wave for ambulance to pass without having any obstacles in its way. One of the problems that could be noticed here in Doha by people visiting or living in Qatar is the traffic jams. This is due to many factors that could be summarized in three main ones: - accidents, road constructions and heavy car traffic in certain roads especially in rush hours. This affects greatly in extending the time needed for an ambulance to reach its destination, which can be either the accident location or to return back to the hospital. So there is a need to solve this serious problem that could affect and has impact on the individuals, state economy and society.

The intelligent traffic light system for ambulance use is considered a powerful system that can reduce and solve the traffic jams problem that an ambulance may face. The project main purpose was to introduce a possible solution for solving this serious problem. It was implemented to take the advantage of both the GSM and GPS technology. It was designed so that an SMS message with the ambulance GPS position is sent from the ambulance to the traffic controller server. The closest traffic light is decided and another SMS message containing the sequence to be generated on the traffic light is sent from the server to the traffic light and the green wave is given to the closest traffic light to the ambulance so that it can smoothly pass.

The system consists of three main components: Wireless Traffic Controller (WTC): Responsible for generating the different states of the traffic light and giving the green wave to the desired traffic light based on the SMS arrived from the server. Ambulance Information Transmitter (AIT): Responsible for gathering the ambulance GPS positions while moving and send them continuously to the server. Traffic Control Server (TCS): Responsible for deciding the closest traffic light to the ambulance based on the database it has and send the required changing SMS message to the WTC unit to get the traffic light green for the ambulance to pass. In order to reduce the cost of the system, GPRS technology was used instead of the GSM to get the GPS positions of the ambulance car to be sent to the server so that it can be decided which traffic light intersection should change its stated in order for the ambulance to pass.

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