

this study, prefabricated vertical drains (PVD) were chosen because of their suitability and economic cost. As to date, PVD were constructed at paddy fields in Kodiang and Tokai in Kedah, and Arau in Perlis. Field instruments were installed to monitor the ground movements during construction. The main instruments used here include deep settlement gauges, displacement marker and surface settlement markers. Monitoring work is progressing at the sites for period of 6 months to 12 months.

**14. RoboFriend: Developing Human Like Robotic Arm that Interacts to Human's Verbal Commands.**

*Sami Salama Hussen Hajjaj (INTI International University)*

*Status: Completed*

*Approved fund: RM 20,000*

The RoboFriend project is a student-based research project created to utilize elements of Human-Robot Interaction (HRI) in tackling the problem of motion planning in dynamic environment for robots with higher Degree of Freedoms (DOFs). By developing a humanoid robotic arm (9 DOFs), to be controlled using visual and/or audio input signals from users, and use these queues to learn to avoid similar obstacles in the future. This project was divided into 4 major sub-projects; development of the gripper (wrist to fingers), development of manipulator (shoulder to wrist), development of the electronics and controls, and finally development of the HRI interface. Each sub-project was given to an engineering student, to be completed as his/her final year engineering project. Being a student-based project, this work had a secondary objective; to investigate the effectiveness of incorporating robotics research in undergraduate engineering education. Challenges included the design/development of the humanoid gripper, due to its conflicting design parameters of flexibility and structural stability. At the end, the humanoid arm was made to response to human voice. Data also showed that research enhanced students' learning experience as students were able to demonstrate their recently acquired knowledge in contributing to this work. Therefore, it can be concluded that incorporating research in undergraduate engineering studies is effective.

**15. Development of Humanoid Gripper (with 18 - 23 DOFs): Design, Development, and Construction of a Humanoid Gripper that almost copies the Human Fist.**

*Sami Salama Hussen Hajjaj (INTI International University)*

*Status: In progress*

The human hand is a marvel of engineering. It can do wonders; we could perform surgical procedures, play wide variety of musical instruments, communicate with others (sign language), and when needed, we could use it as a weapon. This is no surprise, considering the fact that the human fist combines contradicting features. The human fist is extremely flexible, yet structurally sound, it is very light in weight, but it is also very strong and solid. This project aims at replicating the human fist as much as possible. This work attempts to design, develop, and build a gripper that mimics the human fist in its mechanical features.

**16. Performance of ISO Certified Construction Firms: An Empirical Study on Construction Customer Satisfaction**

*Benny Lee Hai Chim (INTI International University)*

*Status: In progress*

The goal of this research is to conduct an empirical study on the performance of ISO certified construction firms in Malaysia. The performance at the organizational level of these construction firms will be compared with that of the control group i.e. the non-certified construction firms. The results will be tested statistically to show whether there is any significant difference between the performances of the two groups of construction firms. The criterion used for the measurement of performance is customer's satisfaction. Clause 3.1.4 of ISO 9000:2008 defines customer's satisfaction as "customer's perception of the degree to which the customer's requirements have been fulfilled" (ISO, 2009). The primary fulfilment of construction customers' expectations are efficiency of service quality, process quality and product quality rendered by the construction firms.

**JOURNALS, CONFERENCE PROCEEDINGS, BOOKS, CHAPTERS IN BOOK AND WORKING PAPERS**

**Journal Publications**

1. C.F. Kwong and Y.I. Go (2010), "Potential Implementation of Hybrid Scheme for Satellite / Mobile Networks" *International Journal of Network and Mobile Technologies (IJNMT)*, Issue 2, ISSN: 1832 – 6758. Indexed in (Cabell, OA-journals, New Jour, Open J-Gate, Scirus, Google Scholar).
2. Vengadeshwaran Velu, Saw Sor Heoh and Lee Sing (2010) "Comparison of Device Parameters and Plasma