



▶ IN 'THE SUPERVISOR', WE ARE HONORED TO PRESENT AN EXCLUSIVE INTERVIEW WITH DR. RAYNER ALFRED 2



▶ ITS THE FASTING MONTH, RAMADHAN AL-MUBARAK. LEARN MORE ABOUT IT 3



▶ FEATURING COOL ARTICLES FROM CHEMICAL ENGINEERING & CIVIL ENGINEERING 8

PROACTIVE-PROFESSIONAL-PUBLISH

SKTM PG newsletter

DELIVERING YOU INFORMATIVE UPDATES AND MORE READING EXCITEMENTS!

Welcome


The Supervisor

Buzz with: The Ramadhan

PG Activities / Achievements

What happened in...

Fun & Facts



Dear readers,

This 2nd SKTM PG newsletter gives us the opportunity not only to provide articles of interest on technical topics, but to help keep you informed of recent news within the SKTM PG unit that highlights SKTM entities.

In the first newsletter of March 2012, we gave a general introduction of the SKTM PG activities and achievements. We also published the Chinese New Year significance along with scientific articles on Information technology and electrical engineering. It is in this newsletter that we proudly present the next set of results, focusing on the Ramadhan festival and general articles on Chemical and Civil engineering along with the feature on the supervisor Dr.Rayner Alfred, head of Software engineering.

I am pleased to report continued progress in our programs and initiatives. For the first time in the SKTM more PG scholars are graduating this year. Our research scholars excelled in getting gold medals at PEREKA 2012.

We hope that this edition of the newsletter will contribute to the growing success of the series and look forward to continuing our collaboration with the partners of this consortium. And again, we are looking forward to your ideas, suggestions or general feedback.

On behalf of the entire SKTM PG newsletter team, wishes you a happy and successful Ramadhan.

POGAKU.RAVINDRA
EDITOR, SKTM NEWS LETTER

Message from Dean

Dear PG Scholars:

It is my great pleasure to greet you as the Dean of SKTM family. Hope everyone had enjoyed the first newsletter as much as I did. I want to express my gratitude to the hard works of all the SKTM PG NEWS LETTER members and students for bringing out second news letter.

We are extremely proud of our PG scholar's outstanding achievements, and looking forward to seeing continuous successes of our scholars. We will persistently reach out to look for opportunities to extend our network and to connect members with PG scholars worldwide who share our common interests. I am excited about the opportunity to serve Dean in this capacity.

Wish you a successful and productive Ramadhan.

Sincerely,
Dr.Rosalam Sarbatly

THE SUPERVISOR

Interview with Dr. Rayner Alfred...



BIOGRAPHY

Dr. Rayner Alfred began his first education at S.R.J.K St. Peter, Kudat and he continued his education in Science Middle School, Labuan (Formerly known as SBPL).

He then received a scholarship in 1990, to further his study in Computer Science at Polytechnic University of Brooklyn in New York (KPP ITM / Indiana University Twinning Programme), United States of America. In 1994, he graduated cum Laude in Computer Science from Polytechnic University of Brooklyn and in the top 5 percent of his class where he received the Myron M. Rosenthal Academic Achievement Award for the Outstanding Academic Achievement in Computer Science. He then received a Teaching Assistantship Award to pursue his master's degree in Computer Science at Western Michigan University, Kalamazoo, USA. He completed his master's study in 1997 and came back to Malaysia and worked as a System Analyst and Database Administrator with Corporate Dynamics Sdn Bhd before joining the School of Engineering and Information Technology (SEIT), Universiti Malaysia Sabah (UMS) in 1999.

After working for 5 years, he pursued his PhD study in Artificial Intelligence at the Computer Science Department, University of York, England. Dr. Rayner Alfred received his Ph.D. in computer science in 2008 from the University of York, England. His specific area of interest is in knowledge discovery based on data summarization and information retrieval theory (DARA).

During his study, in his research, he has won the best application paper award at the 4th International Conference on Advanced Data Mining and Applications held in Chengdu, China that was held on the 8th-10th October 2008. The paper, entitled "A Genetic-Based Feature Construction Method for Data Summarization," proposes an innovative approach for feature construction in the context of summarizing data from multiple tables. The extended version of this paper has been reviewed and published by Wiley Publishing in a special issue of Computational Intelligence Journal in 2010. Dr. Rayner has also won the Best Paper award, for the paper entitled "Discretization Numbers for Multiple-Instances Problem in Relational Database" at the Eleventh East-European Conference on Advances Databases and Information Systems (ADBIS 2007) held in Varna, Bulgaria on 29th Sept – 3rd Oct 2007. In recent years, BioDARA was introduced in 2010 where he won three Gold awards at PEREKA 2010 (UMS), ITEX 2010 (Kuala Lumpur) and SIIF 2010 (Seoul, Korea).

Now, he serves as the head of program for the Software Engineering program, at SEIT, UMS.

SKTMPG: What has been your personal key of success?

DRA: Persistence, determination and have "a sense of urgency" in completing my prioritized list are some of the real keys to my high performance and maximum personal productivity.

SKTMPG: What do you see the greatest strength of our SKTM Postgraduate Unit?

DRA: The greatest strength of the SKTM postgraduate unit is that it has world-class researchers and offers a few high profile graduate programmes in the areas of Engineering and Information Technology. Prospective students should take this opportunity to enrol themselves into the SKTM postgraduate programmes.

SKTMPG: What are the criteria of students you would like to supervise?

DRA: I am looking for students who are independent, hard workers, quicker learners, keen to improve their skills and committed to complete the tasks assigned to them.

SKTMPG: What are some of your professional or maybe personal goals for the future?

DRA: Most of us are trading our time for money (Working for money). I prefer to trade time for knowledge and get paid for doing just that. Because of education, I have travelled all over the world. For that reason, my professional or personal goal is to constantly learn to improve myself in research and education fields and become a better person.

*As the crescent moon is sighted...
 And the holy month of Ramadhan begins...
 From dawn to dusk we fast and pray..
 Trying hard to do good deeds..
 Wishing all a wonderful Ramadhan.*

The Holy Month of Ramadhan



What is Sawm (Fasting)?

The Arabic word for fasting is called “sawm” in the Quran. The word sawm literally means “to abstain”. According to Shariyah, the word sawm means to abstain from all those things that are forbidden during fasting from the break of dawn to the sunset, and to do this with the intention of fasting.

Purpose of Fasting

In chapter 2 verse 183 the Quran says, “O you who believe, fasting is prescribed for you as it was prescribed for those who were

before you, in order that you may learn taqwa (piety)”. Taqwa is a very important spiritual and ethical term of the Quran. It is the sum total of all Islamic spirituality and ethics. It is a quality in a believer’s life that keeps him or her aware of God all the time. A person who has taqwa loves to do good and avoid evil for the sake of God. Taqwa is piety, righteousness and consciousness of God. Taqwa requires patience and perseverance. Fasting teaches patience, and with patience one can rise to the high position of taqwa.

The Prophet said that fasting is a shield. It protects a person from sin and lustful desires.

According to Imam Al Ghazali, fasting produces a semblance of divine quality of samadiyyah (freedom from want) in a human being. Imam Ibn Al Qayyim, viewed fasting as a means of releasing the human spirit from the clutches of desire, thus allowing moderation to prevail in the carnal self.

Maulana Mawdudi (d. 1979 C.E.) emphasized that fasting for a full month every year trains a person individually, and the Muslim community as a whole, in piety and self restraint.

Many medical professionals recognize that fasting is beneficial to our health. It provides a break in the cycle of rigid habits and gives some of our internal organs much-needed rest.



Rules of Fasting

A) Who must fast?

Muslims all over the world wait eagerly for Ramadhan, as it is a time of increased inner peace and well-being. Fasting in the month of Ramadhan is obligatory upon every adult Muslim, male or female, who has reached puberty, is sane and who is not sick or traveling. Sicknes could be a temporary sickness from which a person expects to be cured soon. Such a person should not fast during the days of his or her sickness, but he or she must fast later after Ramadhan to complete the missed days. Those who are sick with incurable illness and expect no better health are also allowed not to fast but they must pay the fidyah, which is giving a day’s meals for each fast missed to a needy person. Instead of food for one day one can also give equivalent amount of money to a needy person. Women in their menses and post-natal bleeding are not allowed to fast, but they must make up the fast later after Ramadhan. If pregnant women and mothers who are nursing babies can also postpone their fasting to a later time when they are able to do so.

A travel according to the Shariah is any journey that takes you away from your city of residence, a minimum of 48 miles or 80 kilometers. The journey must be for a good cause. One must avoid frivolous travel during Ramadhan which causes a person to miss fasting. If possible one should try to change their travel plans during Ramadhan to be able to fast and should not travel unless it is necessary. The traveler who misses the fasts of Ramadhan must make up those missed days later as soon as possible after Ramadhan.

B) Fasting According to the Sunnah

Sunnah according to hadith terminology denotes any saying (qawl), action (fi’l), approval (taqrir), or attribute (sifa), whether physical (khilqiyya) or moral (khu-luqiyya) ascribed to (udifa ila) the Prophet, whether before or after the beginning of his prophethood.

1 - Take sahur (pre-dawn meal). It is Sunnah and there is a great reward and blessing in taking sahur. The best time for sahur is the last half hour before dawn or the time for Fajr prayer.

2 - Take iftar (break-fast) immediately after sunset. Shariah considers sunset when the disk of the sun goes below the horizon and disappears completely.

(cont.)

3 - During the fast, abstain from all false talks and deeds. Do not quarrel, have disputes, indulge in arguments, use bad words, or do anything that is forbidden. You should try to discipline yourself morally and ethically, besides gaining physical training and discipline. You should also not make a show of your fasting by talking too much about it, or by showing dry lips and a hungry stomach, or by showing a bad temper. The fasting person must be a pleasant person with good spirits and good cheer.

4 - During the fast, do acts of charity and goodness to others and increase your worship and reading of the Quran. Every one should try to read the whole Quran at least once during the month of Ramadhan.

C) Things That Invalidate the Fast

One must avoid doing anything that may render your fast invalid. Things that invalidate the fast and require qadaa' (making up for these days) are the following:

- * Eating, drinking or smoking deliberately, including taking any non-nourishing items by mouth or nose.
- * Deliberately causing yourself to vomit.
- * The beginning of menstrual or post-childbirth bleeding even in the last moment before sunset.
- * Sexual intercourse or other sexual contact (or masturbation) that results in ejaculation (in men) or vaginal secretions (orgasm) in women.
- * Eating, drinking, smoking or having sexual intercourse after Fajr (dawn) on the mistaken assumption that it is not Fajr time yet. Similarly, engaging in these acts before Maghrib (sunset) on the mistaken assumption that it is already Maghrib time.

Sexual intercourse during fasting is forbidden. Those who engage in it must make both qadaa' (make up the fasts) and kaffarah (expiation by fasting for 60 days after Ramadan or by feeding 60 poor people for each day of fast broken in this way). According to Imam Abu Hanifah, eating and/or drinking deliberately during fast also entail the same qadaa' and kaffarah.



D) Things That Do Not Invalidate Fasting

During fast, the following things are permissible:

- * Taking a bath or shower. If water is swallowed involuntarily it will not invalidate the fast. According to most of the jurists, swimming is also allowed in fasting, but one should avoid diving, because that will cause the water to go from the mouth or nose into the stomach.
- * Using perfumes, wearing contact lenses or using eye drops.
- * Taking injections or having a blood test.
- * Using miswak (tooth-stick) or toothbrush (even with tooth paste) and rinsing the mouth or nostrils with water, provided it is not overdone (so as to avoid swallowing water).
- * Eating, drinking or smoking unintentionally, i.e., forgetting that one was fasting. But one must stop as soon as one remembers and should continue one's fast.
- * Sleeping during the daytime and having a wet-dream does not break one's fast. Also, if one has intercourse during the night and was not able to make ghusl (bathe) before dawn, he or she can begin fast and make ghusl later. Women whose menstruation stops during the night may begin fasting even if they have not made ghusl yet. In all these cases, bathing (ghusl) is necessary but fast is valid even without bathing.
- * Kissing between husband and wife is allowed in fasting, but one should try to avoid it so that one may not do anything further that is forbidden during the fast.



Eating dates during Ramadhan

Traditionally, dates are known as the food Muhammad ate when he broke from his fast. During the period of Ramadhan, when fasting lasts from sunrise to sunset, the body can develop mild health problems such as headaches, low blood sugar, and lethargy. To avoid such problems, one should carefully monitor their eating habits once fasting for the day has ended. Dates are an excellent source of fiber, sugar, magnesium, potassium, and have carbohydrates which will aid the body in maintaining health. The carbohydrates found in dates also make the fruit a slower digesting food, much better than fried or fatty foods which digest fast and leave one hungry for more.

Source: <http://www.islamicity.com/articles/Articles.asp?ref=IC0311-2136>
http://mideastfood.about.com/od/specialoccasionfoods/ff/dates_ramadan.htm



Research Activities - School Level

Research presentation (Postgraduate Research Seminar) within school level, is held every Thursday of first and third weeks consecutively. In this section, we provide you the list of those who had presented recently together with one randomly chosen abstract.

CHOSEN ABSTRACT:

Intelligent Ethical Wealth Planner: A multi-agent Approach

Phang Wai San Tan Li Im
Centre of Excellence for Semantic Agents
(CoE)
School of Engineering and Information Technology
Universiti Malaysia Sabah
Kota Kinabalu, Malaysia

Abstract - This paper presents the development of a multi-agent framework in ethical wealth management where the focus is on the design and implementation of various types of agent. This development is part of an on-going project which aims to develop a novel ethical wealth planning model based on multiagent system. The objective of this paper is to propose a multi-agent framework that can plan, predict, assemble and recommend investment portfolio based on a set of preferences. The framework that has been addressed in this paper allows multiple agents with variable tasks to work together to achieve a certain goal.

CHOSEN ABSTRACT:

Genetic Algorithm Based Multivariable Control for Exothermic Batch Process

Tan Min Keng (mscLab)

Abstract - Exothermic process is highly nonlinear and complex process. Large amount of heat will be released during the chemical reaction. As a result of the exothermic behaviour, the reaction may become unstable and consequently poses safety concern to the plant if the reactor temperature exceeds the cooling capacity. In the industrial point of view, heating is needed in order to speed up the reaction rate so that it can reduce the overall process reaction time. Hence, this paper proposes genetic algorithm (GA) to control the reaction temperature as well as to balance the production needs with the safety specification. GA exploits probabilistic search method to optimise the specific objective function based on evolutionary principle. Simulation assessment of the GA has been carried out using a benchmark exothermic batch process model. The results show that GA is a good candidate in controlling the reactor temperature.

LIST OF RECENT PRESENTERS (cont.)

Name: Siew Zhan Wei
Supervisor: Mr.Kenneth Teo Tze Kin
Title: Cluster Hends Distributions of Wireless Sensor Networks via Adaptive Particle Swarm Optimization

Name: Wong Chin How
Supervisor: Mr.Kenneth Teo Tze Ken
Title: Optimization of Distributed and Collaborative Beamforming in Wireless Sensor Networks

Name: Chong Mei Yeen
Supervisor: Mr.Kenneth Teo Tze Kin
Title: Graph-based Image Segmentation Using K-means Clustering and Normalised Cuts

GENERAL INFO: ACADEMIC CALENDAR

SEMESTER 1, 2012/2013 SESSION
[BY RESEARCH]

7/9 - 8/9 Registration for New Students

10/9 - 14/9 Postgraduate Methodology Course

10/9 - 21/9 Semester Registration, Extension, Deferment (Current Students)

24/9 - 5/10 Late Registration [A penalty of RM170.00 will be charged]

4/1/2013 Deadline to Submit Student's Progress Report for Student's by Research

LIST OF RECENT PRESENTERS

Date: 05/07/2012

Venue: Seminar Room Multimedia

Name: Tan Min Keng

Supervisor: Dr. Tham Heng Jin, Mr. Kenneth Teo Tze Kin

Title: Genetic Algorithm Based Multivariable Control for Exothermic Batch Process

Name: Phang Wai San, Tan Li Im

Supervisor: Dr. Chin Kim On, Dr. Patricia Anthony

Title: Intelligent Ethical Wealth Planner: A Multi-agent Approach

Name: Scott Lye Carr Ken

Supervisor: Mr.Kenneth Teo Tze Kin
Title: Performance Analysis of Intelligent Transport Systems (ITS) with Adoptive Transmission Scheme

Name: Leow Ching Leong,
Surayaini Bt. Basri

Supervisor: Dr.Rayner Alfred
Title: Enhancing Malay Stemming Algorithm with Background Knowledge

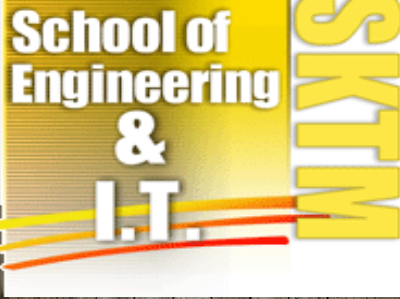
Name: Florence Sia Fui Sze

Supervisor: Dr. Rayner Alfred
Title: Evolutionary based feature construction with substitution for data summarization using DARA

Name: Tan Shee Eng

Supervisor: Mr. Kenneth Teo Tze Kin
Title: Minimizing Network Coding Nodes in Multicast Tree Construction Via Genetic Algorithm

SKTM PG ANNOUNCEMENTS



Tips for Writing Your Thesis

By: Dr.Zaleha A. Aziz

What an examiner look for in a thesis?

1. There is no perfect thesis
 - a. The research question/problem statement
 - b. Is the question good? Relevant/appropriate/useful to work on ? (pay attention to your supervisor)
 - c. Was the question answered?
 - d. Was there any contribution to the knowledge?
2. Hence, student needs to write and produce the best thesis possible.

When to start writing?

1. Start when your work still in progress
 - a. Know what necessary to be included
 - b. Allow time to repeat experiments
- OR
2. Start when all experimental work have completed
 - a. May not allow time to repeat
 - b. A loop may present

It is up to you and your supervisor which approach is best for you

How to start writing?

1. Plan your thesis
 - * Prepare a detail "Thesis plan"
 - * Look at the library-use most recent thesis not more than 10years
 - * Discuss your thesis plan with your supervisor
 - * Thesis plan will evolve as your write
2. Benefits of thesis plan
 - * Managing your thesis in small part
 - * You know what to do next
 - * Allow us to concentrate on one part of thesis at one time
 - * Avoid from going panic
 - * Reduce stress

Know your thesis format

Follow the format as stipulated in the guideline-ask from cps

Gathering information for your thesis

Types of data required, such as data throughout the study, photos or diagram, and references

Meeting with supervisor

Keeping records

Prove readings and draft

Notifying pg centre and your school

• International workshop on Advances in Biofuels will be held at Magellan Sutura Harbour Resort Kota Kinabalu Sabah on 26-27 Sept 2012.

• SKTM PG Unit has upcoming event of conducting PG conference among universities in Malaysia. The conference may be held in November 2012. SKTM PG students are encouraged to participate in this conference.

• Distinct features of SKTM PG Unit:

- * PG Research Handbook
- * Book of Abstract 1999-2012
- * Postgraduate Association (PGA)
- * PG Newsletter
- * Seminars/Conferences/Workshops



Statistic Students Intake for 2012-2013

New SKTM PG Students

| Engineering Course | Master | PhD |
|--------------------------------|--------|-----|
| <i>Mechanical</i> | 3 | 1 |
| <i>Electric and Electronic</i> | 2 | 3 |
| <i>Chemical</i> | 2 | 1 |
| <i>Civil</i> | 4 | 1 |
| <i>Software</i> | 1 | 3 |

2012 graduation

In this section, we provide you the list of those who will be graduating this year.

POSTGRADUATE GRADUANDS

- | | |
|------------------------------|----------|
| 1. Doh Shu Ing | (PhD) |
| 2. Elsa Eka Putri | (PhD) |
| 3. Harimi Djarmila | (PhD) |
| 4. Md. Aminul Islam | (PhD) |
| 5. Md. Mizanur Rahman | (PhD) |
| 6. Mohd Kamal Bin Mohd Shah | (PhD) |
| 7. Olarewaju Akinola Johnson | (PhD) |
| 8. Chan Chao Giap | (Master) |
| 9. Chin Chia Seet | (Master) |
| 10. Chong Hon Lim | (Master) |
| 11. Jim J Jinsin | (Master) |
| 12. Joreen Lim Lay Kim | (Master) |
| 13. Natasha Elysia Joseph | (Master) |
| 14. Pogaku Divya Yadav | (Master) |
| 15. Sow Tian You | (Master) |
| 16. Syra G. Mokunjil | (Master) |
| 17. Terence Jerome Daim | (Master) |
| 18. Thayabaren A/L Ganesan | (Master) |
| 19. Vigneswaran A/L Ramu | (Master) |
| 20. Wong Sze Ling | (Master) |
| 21. Wong Wei Kitt | (Master) |



Research Category

Gold:

- RESEARCH TITLE: Organic Semiconductor Transistor for Nanomemory Application
PROJECT LEADER: Dr. Khairul Anuar Mohamad
RESEARCHERS: Dr. Ismail Saad, Dr. Afishah Alias, Dr. Bablu Gosh, Kenneth Teo

Innovation Category

Gold:

- INNOVATION TITLE: Innovative University Transportation Multifunctional Support System via RFID in Wireless Sensor Network
PROJECT LEADER: Kenneth Teo Tze Kin
RESEARCHERS: Dr. Ismail Saad, Dr. Khairul Anuar Mohamad, Aroland Mconie Jilui Kiring, Siew Zhan Wer, Tan Shee Eng, Scott Lye Carr Ken
- INNOVATION TITLE: Portable Online Programmer for Public Traffic Light System via Multiple Wireless Traffic Sensors
PROJECT LEADER: Kenneth Teo Tze Kin
RESEARCHERS: Yang Soo Siang, Dr. Patricia Anthony, Dr. Nurmin Bolong, Liawas Barukang, Siew Zhan Wei, Chin Yit Kwong

STATISTIC PEREKA 2012 WON BY SKTM

| | Gold | Silver | Bronze |
|-------------------|------|--------|--------|
| Research | 1 | 9 | 9 |
| Innovation | 2 | 8 | 10 |

What happened in...

In this section, we will provide you with some informative reading regarding our field in 'real world adaptation'. For this issue, get ready to digest some short articles from the area of Chemical Engineering and Civil Engineering!

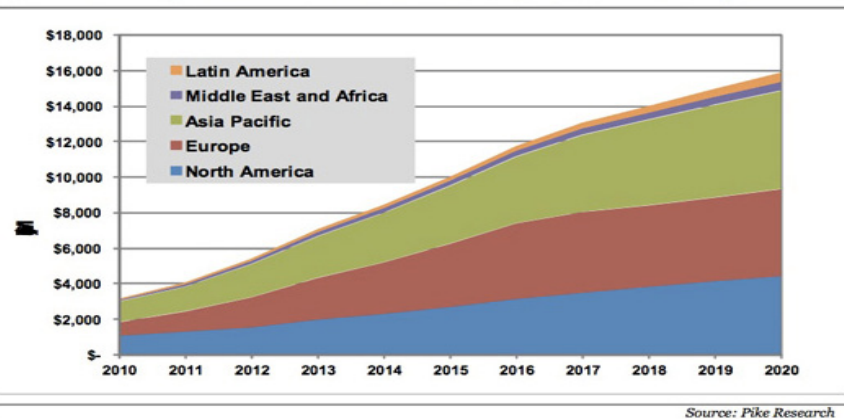
THE IMPORTANCE OF WATER MANAGEMENT TO THE SMART CITY

In the emerging vision for the smart city of tomorrow, we often hear about next generation smart grids, smarter buildings that manage themselves to conserve resources, and smart transportation systems that will lessen congestion.

In fact, Pike Research's Eric Woods recent report for GigaOM Pro, "Key Technologies for the Future of the Smart City" estimated that the global market for smart city investments will reach \$16 billion by 2020 with heavy growth in Europe and Asia-Pacific. But we hear much less about smart water systems for the smart city, and the need to develop more efficient approaches to water as a resource. Part of this is basic developed world bias. A brief look at the U.N.'s freshwater availability map shows that nations with water stress (less than 1700 cubic meters per person per year) and water scarcity (less than a 1000) are mainly found in the Middle East, parts of Africa, China and Southeast Asia. Most of the developed world has been lucky enough to grow up in areas of relative water abundance.

Urbanization is accelerating, however, with a billion and half people expected to move to the city in the next 20 years, and McKinsey has predicted that by 2030 water consumption will increase by 40 percent. There have been signs of problems in international megacities like Mexico City where 5 million residents awoke to dry taps in 2009 and Mumbai where 5,000 tankers deliver 50 million liters of water each day, the precious resource going to the highest bidders. Even domestically, many continue to point out that with less than 15 inches of annual rainfall and its dependence on water from the Colorado River, where demand is expected to overwhelm supply in the next half century, Los Angeles's water supply is risky.

Figure 4: Smart-city and smart-infrastructure investment by region, world markets, 2010–2020



One of the first implementations of smart water systems is smart water meters. A report last year pegged the European smart water meter market at 13 billion pounds by 2020, which is interesting given the fact that there are far fewer top down government mandates for smart water meter deployment than there have been for smart meters for the electricity grid. By 2030 Britain hopes to have all homes installed with smart water meters, which utilities use to identify leaks, create peak pricing mechanisms to incentivize conservation, and catch people who are violating water use restrictions. Designs are already circulating that sync water meters with iPads to give users up to the minute info on their water use, which could drive home to consumers the cost of watering that lawn.

Woods's report for GigaOM Pro examined next generation greenfield communities like Masdar City in the United Arab Emirates (UAE). Masdar City use 54 percent less water than the average UAE city and Woods notes that the city is deploying diverse strategies from micro-irrigation to treated wastewater for landscaping to highly efficient water fittings. The goal is to get to 180 liters per day per person from the current norm of 550 liters per

person per day in the UAE. But in the developing world, where 1 billion of the 3 billion global urban dwellers live in slums with limited access to clean water and additional water management challenges brought on by climate change induced flooding and droughts, the solutions may be less technological. The solutions in the urban developing world revolve around limiting demand, reducing pollution to the water ecosystem, and preventing leakage from aging infrastructure. Though there is evidence that municipalities are starting to take the initiative, as the city of Mumbai has been working with global meter giant Itron to deploy advance water metering infrastructure.

One of the issues is how expensive water has become for the urban poor. A slum dweller in Nairobi, Kenya pays 5 to 7 times more for a liter of water than the average North American.

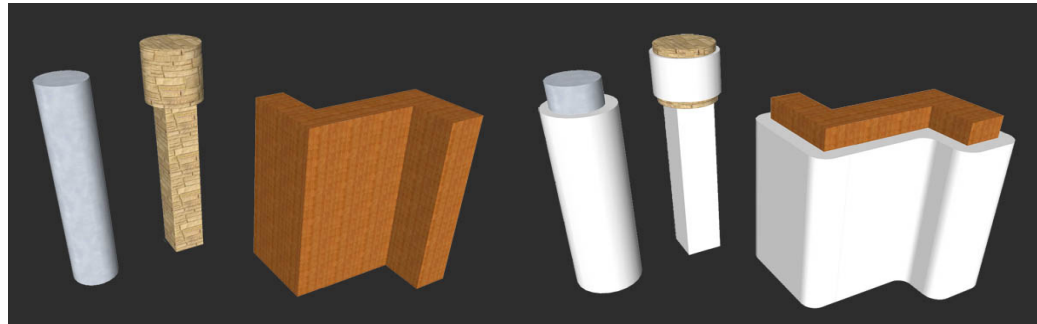
For the first time in history more Chinese now live in cities than in rural areas with per capita income for Chinese city dwellers three times that of rural citizens. The economic drivers of urbanization will remain strong which means cities will have to get more intelligent in their management of water resources. And that goes for all cities, from Mumbai to LA.

The Development of Impact Resistance Structure

Building structure plays a vital role as the human shelter is facing the impact damage risks. These risks crossed a wide range, such as the impact of bullet or other weapon forces act to the protective barrier structures, impact of falling rock subject to the structures at mountain area and falling of heavy loads into the factory structures. Moreover, as the disaster and terror threat level elevated nowadays, many sudden impact loads have applied to the building structures and caused the structures collapsed.

The collapse of building will brings huge losses of human property and lives. Therefore, many researches and designers are incited to develop the impact resistance structure.

In terms of develop the impact resistance structure, the impact responses of the structures have to be studied thoroughly and hence only the design parameter of the impact resistance structure can be developed.



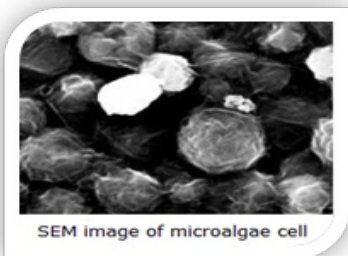
While impact load provided high intensity loading into a specify area on a short time duration, it always is the source of forces which capable to cause damage or fracture of structure. Hence, the ability to simulate the impact event by analytical or numerical analysis greatly reduces the costs and times by eliminating the requirement of full scale prototypes. Similarly, the safety of the analyses is also improved.

Therefore, the analytical or numerical analysis can be utilized to study the impact responses of the different structure members with different types of material properties, different dimension of the structure members and etc., whereas these responses can be utilised to establish a design guideline of the impact resistance structures.

Contributed by: Chong Chee Siang (Civil Engineering)
E-mail - samchong1210@gmail.com

Microalgae: the wave of the future biofuel?

With the increasing of more than 70% of reported works for the past 5 years, microalgae has become the most discussed topic as biomass source in biofuel field. Thus, a brief on microalgae was presented here as a basic reverence for researcher that desired to venture into this field.



What is microalga?

Microalgae are microscopic unicellular organisms that has been estimated exist more than 800,000 species whereas more than 200,000 species has been identified. Microalgae can be found naturally in freshwater and saline lakes. Microalgae capable to perform photosynthesis and has been estimated as 50 times faster than terrestrial grass which produces approximately half of the atmosphere oxygen.

Why microalga?

- Dried biomass composed of 20 to 80% lipid content (w/w)
- Cultivation of microalgae requires less land compared to other commercial crops such as palm oil to produce an equivalent amount of biomass
- Microalgae has high tolerance on environments conditions
- Has comparable energy content with commercial biofuel feedstock: 41 MJ/kg (biodiesel), 29.7 MJ/kg (ethanol), 30 to 39 MJ/kg (bio oil), > 21 MJ/kg (gaseous product)
- Can be incorporated into many fields include wastewater, pharmaceuticals, CO2 sequestration



Microalgae slurry



Dried microalgae biomass

Challenges of microalgae as biofuel feedstock

Unlike other crops such as palm oil and jatropha, cost-efficient of harvesting microalgae is a major challenge because of its small size (2 to 30 μ m). Thus, harvesting process can be costly, particularly those involving a further downstream drying process. About 25% of the production cost is incurred during the harvesting process, which includes the cost of electricity, reagents and the maintenance of separation equipment. The choice of which harvesting technique to apply depends on the species of microalgae and the final product. Currently there is no superior method of dewatering microalgae. Therefore, any new or improved technique that can be applied efficiently in the relevant industries is paramount important.

Contributed by: Emma Suali, (Chem. Eng)
E-mail - emma.suali@gmail.com

Online visit

Modelling, Simulation & Computing Laboratory (mscLab)



MoSimCom is a blog summarizing mscLab in School of Engineering and Information Technology, Universiti Malaysia Sabah, Malaysia.

The modelling, simulation and computing laboratory (mscLab) is a research group that combines research students from Electrical & Electronics Engineering, Computer Engineering, and Chemical Engineering programs.

Click to visit: <https://msclab.wordpress.com/about/>

UMS-MIMOS Center of Excellence in Semantic Agents (CoE)



The UMS-MIMOS Center of Excellence in Semantic Agents is a research center established under the collaboration between UMS and MIMOS.

This center focuses on the research activities related to Semantic Technology and software agents. The vision of the center is to become one of the leading research center in semantic agents.

Click to visit: <http://coesa.ums.edu.my/index.php>

Nano Engineering & Materials (NEMs) Research Group



The NanoElectronics Device and Material Research Group (NICERRG) is a research group that combines the expertise from Electrical and Electronics, Physic Electronics and Civil Engineering programs in UMS.

This group had its beginnings in 2009 focus in engaging viable solutions to design nano-device structure, discovering advance nano-material and exploring innovative nano-modelling product and system.

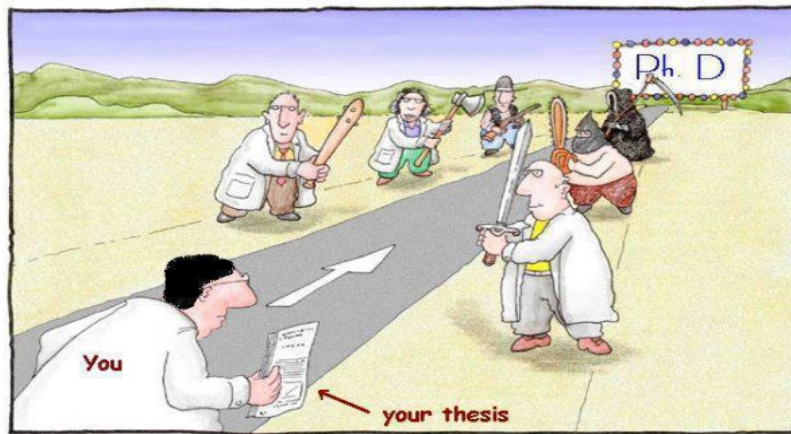
Click to visit: <http://nicerrg.wordpress.com/>

Fun & Facts

THE METHODOLOGY SECTION TRANSLATOR

| What it says: | What it really means: |
|--|--|
| “All Procedure were approved by the Examiners Board” | “Please don’t come protest outside our lab” |
| “Sample were treated with 0.03% sodium citrate buffer for 60.3 min. at 37.4 deg with 20.5 mg/kg poly(I.C) dissolved in 0.97% sterile PBS volume of 8.2 ml/kg ” | “If you deviate from this by one number, it’s not my fault when you can’t replicate my result” |
| “Measurement were performed with $-1.74 < \eta < 1.74$ around a field of 1.16T with $\sigma(pT)/pT$ 0.5% pT/GeV + 1.5%” | “I don’t know why this works but this is how the previous grad student taught me to do it” |
| “Simulation parameters were chosen based on empirically realistic results.” | “We made stuff up” |
| “Analysis was performed using a commercially available software package ” | “I put the numbers into this magic box and outcome my thesis” |

So, where are you right now?



Proud yourself to be called an Engineer?

Expand $2(x + y)$

$$\begin{array}{c}
 2(x+y) \\
 2(x+y) \\
 2(x+y) \\
 2(x+y)
 \end{array}$$

Trust me, I m An Engineer



SKTM PG Newsletter

Editor: Prof. Dr. Pogaku Ravindra
(Postgraduate Coordinator)

Newsletter editorial team:

Surayaini Basri
Yona Falinie Abd. Gaus
Florence Sia Fui Sze
Helena Appolonius
Afriza Sara Filiana Limin

Ever wonder where Angry Birds comes from?



FOOD FOR THOUGHTS

Salam Ramadhan to all Muslims and especially to fellow SKTM Postgraduate.

Hopefully in this holy month of Ramadhan, the desired for reading, writing as well experimenting is up and up towards the goal.

So, in this section we will provide you the most efficient way to write up your report. There are:

10 pages report mission.

- 1 - copy & paste,
- 2 - count pages $v(*_*)$,
- 3 - if it is not enough, insert images or graphs,
- 4 - if more than required pages, cut, delete or edit,
- 5 - check thoroughly the text flow, grammatical error, etc,
- 6 - check again until you feel bored with it,
- 7 - ask someone to check,
- 8 - ok it should be okay now,
- 9 - check again before you submit,
- 10 - submit with no regrets and worries

so my fellow friends...try and error.. opps..should be try and success..~!!!

"Ilmu itu umpama ladang, maka berbanggallah kamu dengan ilmu. Dan jangan sampai kamu kehilangan ladang kebanggaan itu. Ketahuilah! Ilmu tidak akan dapat diperolehi oleh orang-orang yang hanya mementingkan makanan dan pakaian. Ilmu akan datang kepada orang-orang yang hidupnya sederhana.

Tuntutlah ilmu sebanyak-banyak! Walaupun terpaksa berkorban dan menderita. Mungkin suatu hari nanti, bila engkau menghadari suatu majlis dan engkau yang memimpinnya, maka engkau akan menjadi kebanggaan majlis itu" – Imam Syafie