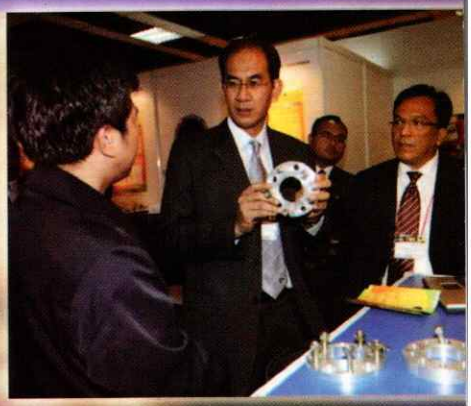
STRATEGIC ALLIANCE

APRIL - JUN UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM) Edisi 1/2009



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UNIVERSITI TEKNI[illegible]A

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NOTES FROM THE CHIEF EDITOR

PROF. DR. MOHAMAD KADIM BIN SUAIDI

DIRECTOR
CENTER FOR RESEARCH AND INNOVATION MANAGEMENT (CRIM)
INDUSTRY AND COMMUNITY NETWORK CENTRE (ICNet)

Alhamdulillah, praise be to Allah, the first issue of ***Strategic Alliance*** *is able to meet readers who are keen to follow up on progress and activities related to research, development and innovation of Universiti Teknikal Malaysia Melaka (UTeM).* ***Strategic Alliance*** *was first published in 2005 as SYNERGY bulletin under the University Industry Center (UNIC) and following on the renaming of UNIC as Center for Research and Innovation Management (CRIM) and the formation of Industry and Community Network Centre (ICNet), the editorial board decided on the name change to closely reflect on the objectives and strategies of UTeM.*

A ***Strategic Alliance*** *is a formal relationship between two or more parties to pursue a set of agreed upon goals or to meet a critical business need while remaining independent organizations. The alliance is cooperation or collaboration which aims for a synergy where each partner hopes that the benefits from the* ***Strategic Alliance*** *will be greater than those from individual efforts. Thus through* ***Strategic Alliance*** *with the industries and communities, UTeM are more prepared to conduct industry's relevant research and innovation and in the process, enhancing the quality of education offered to students.*

The University also provide intellectual support for Small and Medium Enterprises in developing their business activities. The university is committed to the further enhancement of its research quality and productivity by investing in excellence and by exploring new and innovative ways of collaborating that will ensure the generation of high quality research outcomes closely aligned to state, national and international research priorities.

Our research mission is to be regarded both nationally and internationally, as a respected entrepreneurial, research intensive technical university, excelling in research outcomes in our chosen areas of concentration and in the provision of research training, in which learning, teaching, and research are mutually supportive with University-Industry ***Strategic Alliance.***

On the research front, UTeM has been quite successful in the recently held research expos. Our researchers won 1 gold, 1 silver and 5 bronze medals at the Malaysian Technology Expo 2009 and 3 gold, 6 silver and 5 bronze medals at the ITEX 2009. Several of our research products are in the advance stage of discussion with industry partners for commercialization. This just goes to show that we can compete with the best in the country.

It is our sincere hope that this brief notes and the rest of the articles in ***Strategic Alliance*** *would be able to convey readers, universities, industries and public communities, the cutting edge and pioneering works that UTeM has embarked on. It is also our intention to make known of the readiness of UTeM in forging* ***Strategic Alliances*** *with partners from outside the university in areas that are critical to the development of our beloved nation. Please feel free to contact us at CRIM and ICNet, and we warmly welcome enquiries from potential partners in research, consultancy and innovative activities.*

Prof Dr Mohamad Kadim bin Suaidi
Director
Center for Research and Innovation Management (CRIM)
Industry and Community Network Centre (ICNet)

MAJLIS PERUTUSAN 2009'

*** THE UPCOMING YEARS WILL WITNESS PROMINENT CHANGES***

AN EXCERPT FROM THE SPEECH OF VICE CHANCELLOR OF UTeM PROF. DR. AHMAD YUSOFF HASSAN

All UTeM staffs look forward with anticipation to the arrival of Professor Dr. Ahmad Yusoff Hassan as the new Vice Chancellor (VC). At the MITC Ballroom, Ayer Keroh on Wednesday the 5th of February 2009 the whole UTeM staff turned up to hear to the VC speech entitled "Menghayati Perubahan Untuk Kecemerlangan". The VC asserted that change is necessary to the evolution of a university - when 'change' is well planned and managed, it can lead to growing opportunities for all involved. To move from the state of passivity to one of activity, the University needs to mobilize staffs at every level and gain their full support. He urged all staff to have the responsibility of changing for the better in realizing both the mission and vision of the University. His obvious sincerity emphasized the spirits of teamwork and the needs of making every UTeM staff work towards excellence. This is vital as each and every staff has their own specific role in this institution. The VC quoted Michael Y. Yoshino, the Professor at Harvard Business School, "Recipes for Changes require a sense-of-urgency, a clear vision, commitment and strong implementation strategies". He instilled determination in the hearts of all UTeM staff with words of fellowship and encouragement:

'IT IS NOT THE STRONGEST OF THE SPECIES WHO SURVIVE, NOT THE MOST INTELLIGENT, BUT THOSE WHO ARE THE MOST ADAPTIVE TO CHANGE'

In parallel with the National Higher Education Strategic Plan, UTeM Strategic Plan 2009-2010 has been formulated in paving a clearly defined path towards university's excellence. The university's role has evolved and became more important in developing world-class human capital for the nation. In achieving this, the VC reiterated that the strength of research and innovation is the gateway to be a high-ranking university among the higher learning institutions in Malaysia. As Research, Development and Innovation activities provide the basis for the future directions of the University, UTeM is highly committed to the further enhancement of its research quality and productivity. With strategies like investing in excellence and exploring new, innovative ways of collaborating, UTeM will ensure the generation of high quality research outcomes closely aligned to state, national and international research priorities. In order to accelerate UTeM to be in the fore front, every staff has to recognize their own potentials and utilize that to the maximum. Besides sincerity and satisfaction, creativity and innovation should be placed as the key essence in carrying out the duties particularly in generating new technologies for industries. These are among the VC's aspirations encouraging activities related to Research, Development and Commercialization for the University in 2009 and years after.
This pronouncement signals the start of the wave of change that shall be carried out by the new restructured management lead by the VC himself. It is hoped that the entire UTeM staff will gain benefits from this speech to guarantee that UTEM will be a world class institution, in technical education and training.

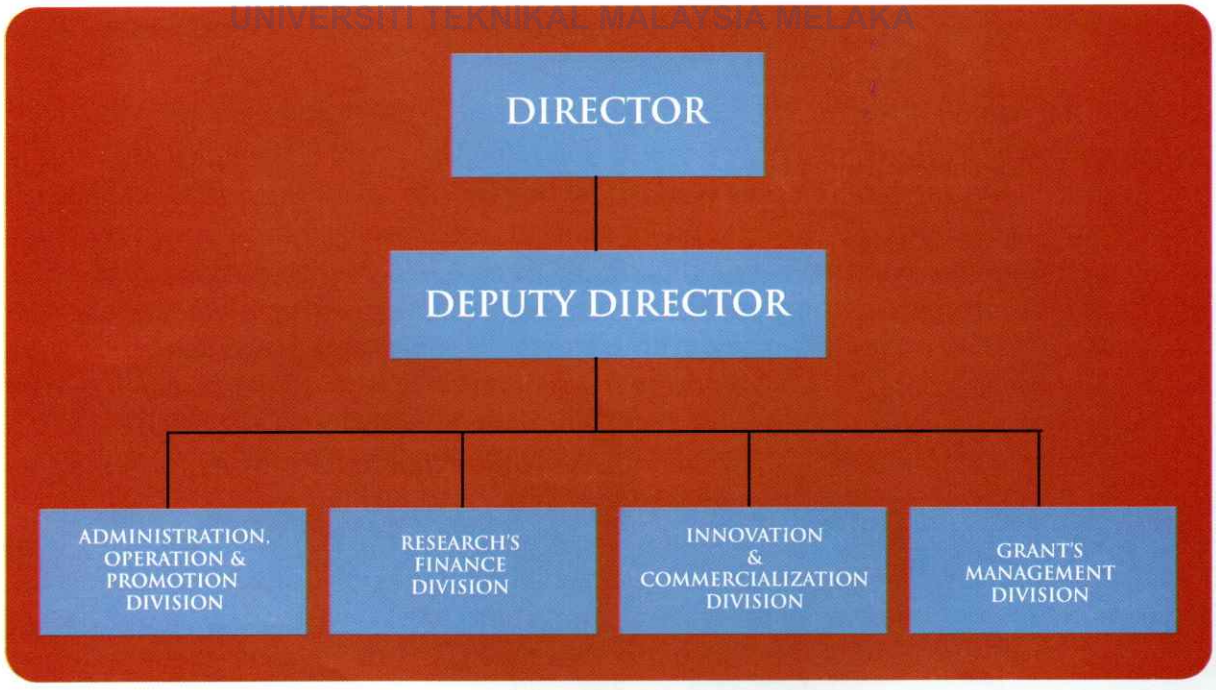
CRIM has its beginning as University Industry Center (UNIC) of UTeM which was formed in June 2002 to foster effort in smart partnership between UTeM and industries. UNIC was renamed as Centre for Research and Innovation Management (CRIM) on 17 March 2009, in order to give more focus on furthering enhancement in research, development, innovation, commercialisation and enterprise. The renaming of UNIC as CRIM involved the formation of a new centre namely, Industry and Community Network Centre (ICNet).

CRIM is the administrative entity that manages and coordinates as well supports research and innovation activities of UTeM. CRIM shall facilitate every effort to commercialise our research products and the university is equipped with the state of the art facilities and manned by experts from various academic and professional backgrounds. CRIM shall assist UTeM in its quest to continually improve its performance in the commercialisation of its research, including growth in technology licensing, patents, contract research and consultancies as well as joint ventures and spin off companies. These strategies will underpin the long-term sustainability of our research and innovation activities,

CRIM is headed by a Director and assisted by a Deputy Director with both of whom are academic appointments. To ensure CRIM meets its objectives and to carry out its main functions, four divisions led by administrative officers were created, namely:

- *Administration, Operation, Promotion and Exhibition Division*
- *Financial Management Division*
- *Grant Management Division*
- *Commercialization and Innovation Division*

CENTRE FOR RESEARCH INNOVATION MANAGEMENT



ICNet was formed under the Chancellery office to facilitate efforts towards closer and beneficial alliances and partnerships with the industry and the community. UTeM is aware of the fact that Strategic alliances and enhanced capabilities to connect UTeM's researchers with the development in the industry are the critical agenda for staying competitive in today's global, knowledge-based economy.

ABOUT US

Strategic alliance among university-industry-community is now considered necessary in view of not only the possible mutual gains for all of the parties involved but also the immense benefits towards nation building and the wider economy.

To further enhance the contribution of Universiti Teknikal Malaysia Melaka (UTeM) in the area of engineering and technology, through the strategic partnership among UTeM, industry and community, Industry and Community Network Centre (ICNet) was established on 18th December 2008 with the approval by UTeM Executive Council. Previously it was under the umbrella of UNIC (University of Industry Centre). The new management of ICNet is under the administration of the Chancellery. The centre acts as a bridge between academia, industry and community. It also plays the role of fostering relationship with the industry and community from various aspects, which include students practical training, industrial exposure, staff industry attachment, research collaborations and other related activities. ICNet is headed by Prof. Dr. Mohamad Kadim bin Suaidi, the Director of ICNet.

OBJECTIVES

ICNet was formed to develop strategic partnership with the industry and community to establish networks and to match UTeM's resources to the needs of the industry and community. On the other hand, it also facilitate the transfer of knowledge and sharing of expertise from the industry and community which will benefit all parties.

VISION AND MISSION

Vision

To be a Leading Center of Strategic Partnership with the industry and community.

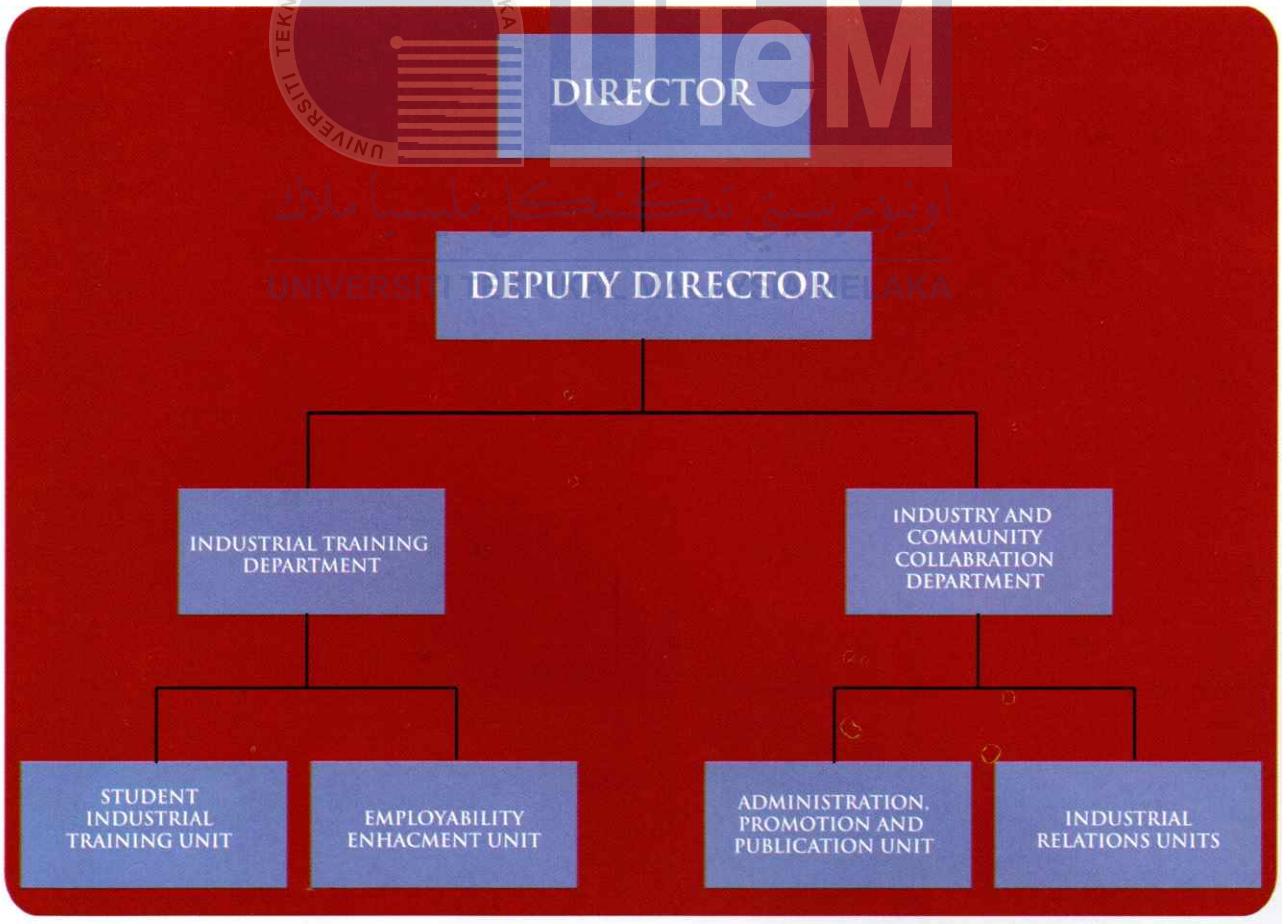
Mission

To engage closely with the industry and the community in as many areas as possible and to be the university's information gateway for the industry and community.

FUNCTIONS

- *To provide the industry and the community with:*
  - *A comprehensive database of the expertise, facilities and resources available at UTeM.*
  - *Information on new inventions, innovations, discoveries, technologies and activities of UTeM.*
- *To develop meaningful linkages and partnerships with existing partners and to establish new ones not only at the local and national levels, but also at the regional and international levels.*
- *To engage in dialogues with the state, industry and community so as to enhance the collaborations in research activities, development, innovation and commercialization.*
- *To be the secretariat to the Industry Advisory Panel (IAP).*
- *To disseminate information via newsletter and website.*
- *To provide faculties and centres at UTeM with a database of industries.*
- *To manage students' industrial training programme.*
- *To coordinate students' employability enhancement and added value training programme.*
- *To manage graduates' apprenticeship programme.*
- *To identify relevant industries for staff industrial attachment.*

INDUSTRY AND COMMUNITY NETWORK CENTRE



UTeM research activities have been growing steadily. The number of grants increases substantially due to the progress development in Research & Development & Innovation (R&D&I) work and outputs. Significant developments can be seen as UTeM strive towards its vision to be one of the World's leading Innovative and Creative Technical University. A clear message regarding the Excellency in R&D&I had been sent to the University community when the University stated in its objectives that UTeM is committed in developing and enhancing strategic industrial based research and development, and promoting its capabilities in research and innovation activities. Key drivers for our research activities are quality and excellence, with an emphasis on the creation of new knowledge for the advancement of fields of study and the enhancement of the society in general.

The University's approach to R&D&I over the next three years will focus on significant problems or issues that are best addressed by the scholarly and intellectual endeavors of disciplinary and multidisciplinary groups of international standard. Ownership of new knowledge, new invention and innovative products is protected through patent, copyright, trademark etc. More invented research products will be actively published, exposed and publicized to the community and industry via documents, for examples books, journals and articles, and also through exhibition both local and abroad. Such activities help to determine UTeM's merit and standards according to the world class.

UTeM, via its Research and Innovation Management Center (CRIM) plays important roles in encouraging and monitoring R&D&I activities. UTeM supports working partnerships between companies and researchers to speed up the development and commercialization process and give each partner a competitive advantage. These collaborations and partnership also help small and medium-sized businesses solve their technical problems, adapt new technologies for the marketplace, and develop new or improved products and processes. Through these intensive ways UTeM builds on individual and group excellence and work into greater wealth for individual, businesses and society at large, in terms of both economic and social benefits.

By establishing new vehicles for the coordination of research activity and the strengthening of international linkages, we will increase our research productivity, enhance the external recognition of the quality and value of our research, build on research areas in which we are already strong, and diversify the sources of research funding. The University will seek continually to improve its performance in the commercialization of its research, including growth in technology licensing, patents contract research and consultancies. These strategies will underpin the long-term sustainability of our research and innovation activities.

URIS (*UTeM Research Information System*)

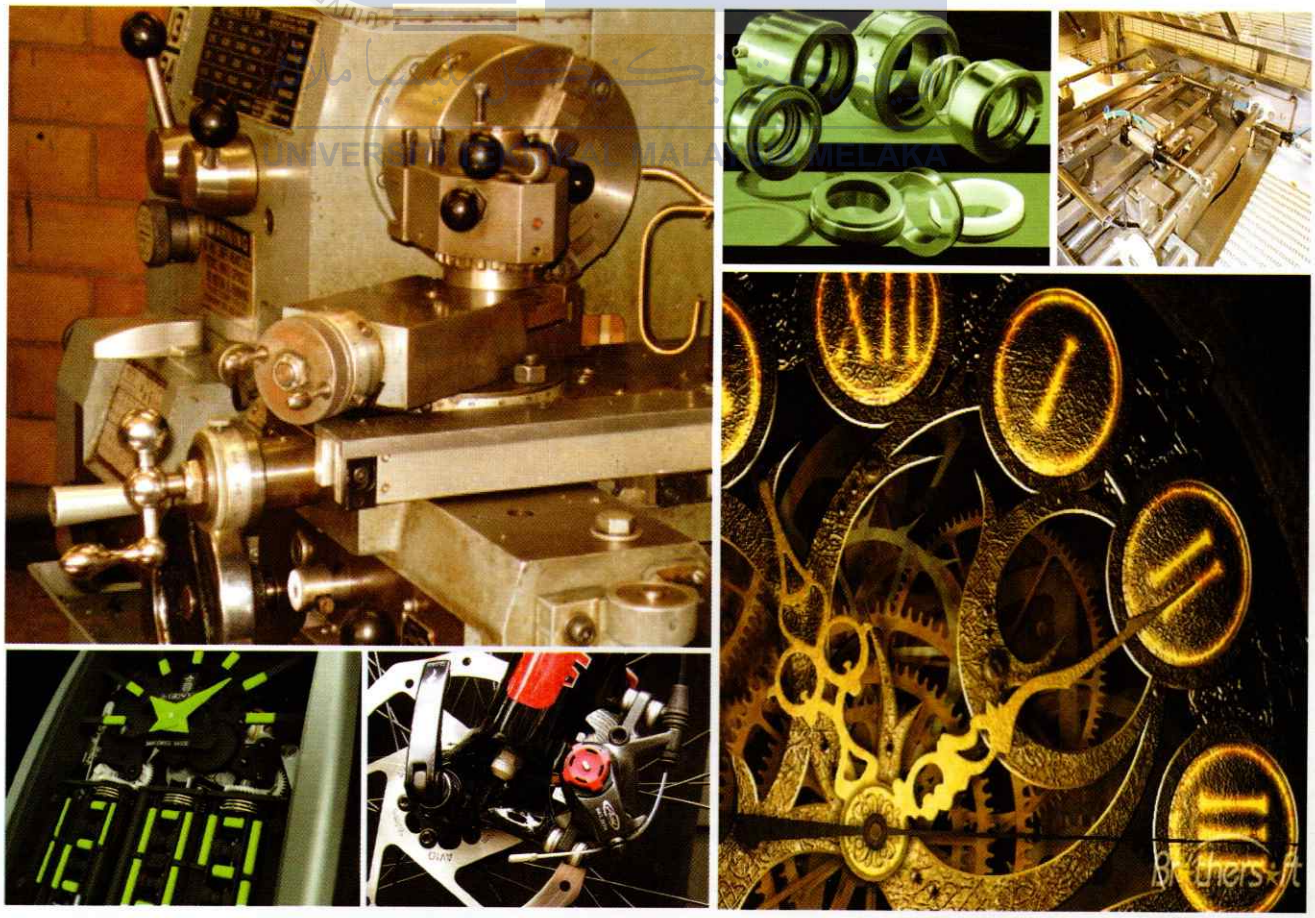
UTeM Research Information System (URIS) was developed by UTeM System Analysts lead by Mr. Mohd. Isa Mohd. Dom, Director of the Computer Center. The system was launched in May 2009 and it still new to many researchers. URIS icon appears on the UTeM portal. All grant holders especially the Short Term Project leaders are requested to register with Computer Center as a user. The aim is to provide a detailed picture of their research status and evaluate their owned research performance. The duty of project leaders in maintaining and accessing the research information become perfectly easy and correct. The system also allows respondents accessible to all information on the research project regarding payments, assets, remaining fund, publications etc. In a long run, URIS enhances coordination and linkage between the project leader, CRIM and Bursary. CRIM would like to extend its appreciation to the Computer Centre, headed by En. Mohd Isa, the director, for their continued support.

THRUST AREAS AND RESEARCH CLUSTERS

The Research and Development objective under the University Strategic Plan provides the basis for the future directions of research and innovation activities at UTeM. The objectives and the priorities in the plan were also shaped by and aligned to the relevant government policies, in particular the National Higher Education Strategic Plan and also the National Innovation Policy. UTeM has identified Advanced Manufacturing Technology (AMT) as its niche area, which requires synergistic commitment of all faculties in UTeM.

Research Thrusts and Clusters have been one strategy to improve the University's profile and its responsiveness to issues of national significance. UTeM's thrust areas and research clusters are multidisciplinary, that includes and draws on the strengths of existing faculties, research centers, institute and laboratories within the university. The university has adopted this strategic approach to take advantage of the interrelationship of research areas and disciplines and therefore capitalise on the seven areas in which the university have strategic advantages.

Clusters are driven by and connect researchers with expertise in various disciplines in a university wide system with industry partners and funding agencies. They provide an excellent foundation for collective scholarly activities and foster the sharing of ideas and expertise. UTeM's research clusters are therefore powerful centers of creativity, where alliance among teams of creative researchers from a wide range of disciplines ignites synergy and excitement, generating the ideas that fuel the innovation necessary for discovering solutions even to the most compelling challenges. We're breaking down traditional disciplinary boundaries because we've learned that collaboration and alliance creates synergy, excitement, and creativity. And all of that leads to important new discoveries:



The Advanced Manufacturing Technology (AMT) is thus underpinned by seven (7) Thrust Areas and Research Clusters as listed:-

No.	Thrust Areas	Research Clusters
1.	Manufacturing Process, Technology and Design *Research Centre:* *Advanced Manufacturing Centre (AMC)*	1. Design and Concurrent Engineering 2. Advanced Manufacturing Process 3. Autonomous & Intelligent Manufacturing 4. Competitive Manufacturing 5. Engineering Materials
2.	Energy and Automotive *Research Centre:* *Centre for Automotive Technology and Design*	1. Renewable Energy and Technology 2. Mechanical System and Innovative Design 3. Automotive Design 4. High Performance Materials and Structures
3.	Industrial Automation and Robotics *Research Centre:* *Center for Robotics and Industrial Automation*	1. Robotics and Industrial Automation 2. Power Electronics And Drives 3. Energy And Power Systems
4.	Telecommunication and Computer Engineering *Research Centre:* *Centre for Telecommunication Research and Innovation (CETRI)*	1. Optoelectronics 2. RF & Microwave Engineering 3. Broadband & Multimedia Communication 4. Computer Engineering 5. Embedded Systems 6. Electronics Instrumentation 7. Consumer Electronics
5.	Advanced Computing Technologies *Research Centre:* *Center for Advanced Computing Technologies (C-ACT)*	1. Intelligent Systems 2. Networking & Soft Computing 3. Data &Knowledge Engineering 4. Visualization & Immersive Technology 5. Computer Vision &Robotic (Covisbot)
6	Technology Management and Entrepreneurship *Research Centre:* *Institute of Technology Management And Entrepreneurship*	1. Technology Management 2. Innovation Management 3. Technopreneurship
7.	Soft Skill for Engineers and Technologies	1. Generic Skills 2. Human Development 3. Language 4. Sociology 5. Islamic Studies 6. Counselling 7. Sport Management

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Researcher Profile

Engr. Sivarao a/l Subramonian

Lecturer
Faculty of Manufacturing Engineering
B.Sc.(Hons) Mechanical-Manufacturing (UTM)

Silver ; Malaysian Technology Expo (MTE 2007)
Bronze ; 18th International Invention, Innovation, Industrial design and Technology Exhibition(ITEX 2007)
Bronze ; 35th International Exhibition of Inventions New Techniques and Products Geneva, Geneva (2007)
IKS Bumiputera RM 1,500

Correct tyre pressure have critical impacts on safety and cost of motoring. But, how many of us knew what the right pressure for our car tyres is? If at all we knew the right tyre pressure, how accurate is the air kiosk output compared to what we want/set? So what? What is so big issue of getting the right tyre pressure is the argument among most of us, without knowing that, the contribution of a right tyre pressure are many more than listed below:

- *Lightens the steering system and ease self steer*
- *Prevents side/mid wear of the tyres (under/over inflated)*
- *Prevents tyre over heating and explosion*
- *Increase the life of absorber and ball joints*
- *Safes tyre life up to 20% (9 months extension)*
- *Saves fuel from 4% to 10%, etc.*

There it goes; a simple tyre pressure measure can give us such a lot of benefits. So, why not get the right pressure now. How is it possible?

AUTOMATIC TYRE PRESSURE CONTROLLER (ATPC) has been invented to make sure the right pressure is inflated into the tyre immaterial of the pressure value set on the kiosk. The controller, being the intermediate equipment will ensure the correct pre-set tyre pressure is filled into your tyre so that; you can gain all the benefits as above easily.

Automatic re Pressure Controller with pre-settings

Intelectual Property Status:	***Patent File - PI 20093255***
Industry Link:	**Teknologi Pembuatan Sdn Bhd**
Contact Person:	For further information, kindly contact **Tel : +6016 - 634 1481** **Fax : +606 - 331 6411** **Email : sivarao@utem.edu.my**

RESEARCHER PROFILE

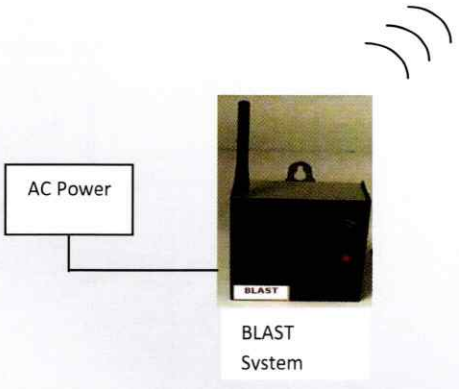
MUHAMMAD HERMAN BIN JAMALUDDIN

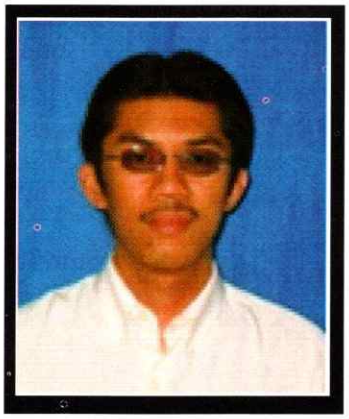
TUTOR
FACULTY OF ELECTRICAL ENGINEERING
B.SC.(HONS) MECHATRONICS (UTM)

GOLD; 20TH INTERNATIONAL INVENTION, INNOVATION AND TECHNOLOGY EXHIBITION (ITEX 2009)

BLAST or Blackout Alert System is a product that is developed with the industrial collaboration of Maxlane Sdn Bhd and Universiti Teknikal Malaysia Melaka (UTeM). It is an effective power failure alert system that can be attached to any device or equipment installed. For instance, this system can be installed on a wide screen television mounted in the MITC Ayer Keroh traffic light junction. Every time a power failure or trip happens, the system will alert the maintenance team instantly for immediate action, thus no additional person is required to monitor the television on-site from time to time. The maintenance team can be in other places and receive the alert via Short Messaging System (SMS). In normal operations, the status of the power supplied to the system can be inquired via SMS. The systems consist of a PIC microcontroller, GSM module and power failure detection circuit. This standalone product is easy to install and operate because it does not require any complex wiring. This significant advantage is a very cost effective solution and in high demand for any system that requires continuous Alternating Current (AC) or Direct Current (DC) power because of its user friendly features. All in all, this poduct has high potential of commercialization.

Intelectual Property Status:	***Filing Progress***
Industry Link:	**Maxlane Sdn. Bhd.**
Contact Person:	For further information, kindly contact **Tel : +6019 - 669 2627** **Fax : +606 - 555 2222** **Email : herman@utem.edu.my**





RESEARCHER PROFILE

MOHD HAZIQ LIM BIN ABDULLAH

LECTURER
FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
BSC. IT (HONS) (UKM), MASTER OF MULTIMEDIA (AUSTRALIA)

SILVER ; UTEM EXHIBITION 2008 (IN CONJUNCTION WITH MALACCA EDUCATION CARNIVAL), INNOVATION CATEGORY, MELAKA INTERNATIONAL TRADE CENTRE (UTEMEX 2008)
GOLD ; 18TH INTERNATIONAL INVENTION, INNOVATION, INDUSTRIAL DESIGN AND TECHNOLOGY EXHIBITION(ITEX 2007)
SILVER ; THE 35TH INTERNATIONAL EXHIBITION OF INVENTIONS, NEW TECHNIQUES AND PRODUCTS OF GENEVA, 18- 22 APRIL 2007

MyLexics is the first interactive multimedia learning courseware to teach the preschool dyslexic children to read, write and spell in Malay language. The courseware has been developed based on the following hybrid principles: The 'Dual coding theory' by Allan Paivio who suggested that a recall or recognition can be enhanced by presenting information in both visual and verbal form, combined with the Scaffolding teaching strategy – providing assistance to student on a as-needed basis, fading it as the competence increases. The courseware content has been structured as building-up process: The children learn the individual 'alphabets' and then combine the alphabets to make 'syllables', finally they add the combined syllables to other syllables to form 'words'. The implementation of stated principles via multimedia elements allows independent and interactive learning, and yet engages the learners in interesting tasks.

The courseware comprises two main modules namely 'Modul Pembelajaran' and 'Aktiviti'. The learning materials included in the MyLexics is outlined by the Subject Matter Expert from Dyslexia Association of Malaysia. The typical learning process begins with the child learns the individual 'Abjad', which consists of vowels and consonants. Here, the important connection between the sound and the letter is made when the children read. Next, they learn to combine the alphabets to construct two types of 'Sukukata' (KV and KVK); finally syllables are used to construct 'Perkataan' or word.

The learn-by-doing 'Aktiviti' is to recall the knowledge learnt in the all main modules. The activities are structured into three groups, which are 'Abjad', 'Sukukata' and 'Perkataan'. Wide range of activities is included in this module, such as Drag and Drop, Sound Match, Word Snip and so on. Each part of MyLexics activities is cumulative as it leads on to the next and the child can be confident that he is only expected to do work for which he has been well prepared for. There are three sub-modules in 'Modul Pembelajaran' which are 'Abjad', 'Sukukata' and 'Perkataan'.

Intelectual Property Status:	***Copyright***
Industry Link:	**N/A**
Contact Person:	For further information, kindly contact **Tel : +6012 - 363 7326** **Fax : +606 - 331 6500** **Email : haziq@utem.edu.my**

(GRADUATE EMPLOYABILITY ENHANCEMENT AND ADDED VALUE TRAINING PROGRAM) UTeM 2009

To equip students with necessary knowledge, skills and qualities required by employers and to assist the fresh graduates to obtaining job, the GREAT program was implemented. The program will prepare UTeM's graduates with enhanced employability skills and values which will prepare them to compete in the competitive job market.

No.	Program	No. of Participants
1.	• Industrial Training Preparation Program	1250
2.	• Finishing School Program	500
3.	• Certified Solidwork Associate(CSWA) for Faculty of Manufacturing Engineering	56
4.	• Ultrasonic Testing level 1 for Faculty of Manufacturing Engineering	47
5.	• Lean Six Sigma	60
6.	• Training for Network Communication: Embedded Router and Network Programming	200
7.	• Mechatronics Technology Applications Workshop	100
8.	• Certified Fiber Optic Technician (CFOT)	58
9.	• Adobe Photoshop CS3 level 1 & level 2	48
10.	• Fundamental of the Java Programming Language for BITS & BITD students	96
11.	• Certified Energy Manager	60
12.	• Green Card Program	240
13.	• UNIGRAPHICS Series 1	30
14.	• UNIGRAPHICS Series 2	30
15.	• Essentials of Project Management	30
16.	• Industrial Safety Passport Course	99
17.	• Professional Certified SolidWorks Associate (CSWA) for Faculty of Mechanical Engineering	30
18.	• Ultrasonic Testing Level 1 for Faculty of Mechanical Engineering	31
19.	• Melbourne Technical Visit 2009 (MTV 09')	35

INDUSTRY COLLABORATION - MEMORANDUM OF UNDERSTANDING (MALAYSIA) - 16 MoU

No.	Partner	Date of Signing	Responsible Centre
1	Composites Technology Research Malaysian (M) Sdn Bhd (CTRM)	18/2/2004	Faculty of Manufacturing Engineering (FKP)
2	Mahr (Malaysia) Sdn Bhd	14/3/2006	Faculty of Manufacturing Engineering (FKP)
3	**Impressive Edge Berhad**	10/8/2007	Faculty of Manufacturing Engineering (FKP)
4	**Anzag Industries Sdn. Bhd.**	10/8/2007	Faculty of Mechanical Engineering (FKM)
5	**Persatuan Dyslexia Malaysia**	12/8/2008	Faculty of Information and Communication Technology (FTMK)
6	**KRS Manufacturing Industries (M) Sdn. Bhd.**	12/9/2008	Faculty of Electrical Engineering (FKE)
7	**Kusocom Concept Farms Sdn Bhd.**	12/9/2008	Faculty of Manufacturing Engineering (FKP)
8	**January Autogas Sdn. Bhd.**	12/9/2008	Faculty of Mechanical Engineering (FKM)
9	**Enetronics Sdn. Bhd.**	17/11/2008	Faculty of Electronic & Computer Engineering (FKEKK)
10	**Al Automation Sdn. Bhd.**	17/11/2008	Faculty of Electronic & Computer Engineering (FKEKK)
11	**Micro Zass Sdn. Bhd.**	17/11/2008	Faculty of Manufacturing Engineering (FKP)
12	**Fluke Network Inc.**	17/11/2008	Faculty of Information and Communication Technology (FTMK)
13	**Hampshire Aerospace Sdn Bhd**	25/02/2009	Faculty of Manufacturing Engineering (FKP)
14	**DreamEDGE Sdn Bhd**	25/02/2009	Faculty of Mechanical Engineering (FKM)
15	**Advance Pact Sdn. Bhd. & Melaka Biotech Holdings Sdn. Bhd.**	28/04/2009	Faculty of Electronic & Computer Engineering (FKEKK)
16	**SMIDEC**	6/5/2009	Center for Continuous Learning (PPB)

UTeM Researchers Grabbed 14 Medals in ITEX 2009

Congratulation

ITEX is the region's leading exhibition to showcase new inventions, new technologies and products, with the aim to secure investment, manufacturing and commercialization prospects and partners. The exhibition brings together a showcase of inventions and innovations by universities, research institutions, and individual inventors and from the corporate sectors from the Asean, Asia and Europe countries. This year ITEX was held on 15th till 17th of May 2009 at Kuala Lumpur Convention Centre.

In its 20th series, ITEX was organized by MINDS (Malaysian Invention & Design Society), the largest body in Malaysia representing individuals, universities and companies who pursue excellence in invention, creativity, research and development and industrial design. On this edition, 15 research projects has been showcased by UTeM with fresh new ideas and design to meet industrials and consumers demand.

The outcome was extremely encouraging as 14 projects won medals with three of the products bagging gold medals, six products won silver medals and 5 products won bronze medals. Muhamad Herman Jamaluddin from FKE together with Ahmad Zaki Shukor won gold for the second consecutive year. Meanwhile Mohd Rizal Akhahari and Mohamad Zoinol Abidin Abd. Aziz together with their teams bagged the gold medals for the first time in ITEX. All the medals were presented by Academician Prof. Emeritus Tan Sri Datuk Dr. Augustine S.H.Ong, President of MINDS during Malam Budaya Cipta held in conjunction with the expo.

PRINCIPAL	CO RESEARCHERS	PROJECT	FACULTY	MEDAL
MUHAMMAD HERMAN BIN JAMALUDDIN	AHMAD ZAKI BIN HJ SHUKOR	BLACKOUT ALERT SYSTEM (BLAST)	FACULTY OF ELECTRICAL ENGINEERING	**GOLD**
MOHD RIZAL ALKAHARI	LIEW SOW MING, MOHD ZAKARIA MOHAMMAD NASIR, MOHD NAZIM BIN ABDUL RAHMAN, MUSTAFAR AB KADIR, PROF. MD RADZAI SAID, ZAIRULAZHA ZAINAL, MASJURI BIN MUSA @ OTHMAN, MOHD KHAIRI MOHAMED NOR	DESIGN AND DEVELOPMENT OF FIRE FIGHTING MACHINE	FACULTY OF MECHANICAL ENGINEERING	**GOLD**
MOHAMAD ZOINOL ABIDIN BIN ABD AZIZ	SYAIFULREDZWAN, PROF. DR. MOHAMAD KADIM SUAIDI	X-POLARIZATION MICROSTRIP PATCH ARRAY ANTENNA	FACULTY OF ELECTRONIC ENGINEERING & COMPUTER ENGINEERING.	**GOLD**

PRINCIPAL	CO RESEARCHERS	PROJECT	FACULTY	MEDAL
RANJIT SINGH A/L SARBAN SINGH	SIVA KUMAR A/L SUBRAMANIAM, SITI AISYAH BINTI ANAS, SANI IRWAN BIN MD SALIM, PROF. ABDUL HAMID HAMIDON	OCCUPANCY SYSTEM FOR AUTOMATIC ELECTRICAL APPLIANCES SWITCHING	FACULTY OF ELECTRONICS ENGINEERING AND COMPUTER ENGINEERING	SILVER
PM DR. ZULKIFILIE BIN IBRAHIM	RAIHANA BINTI MUSTAFA, SITI NORMIZA BINTI MAT ISA	MICROCONTROLLER-BASED HIGH POWER LED ROPE LIGHT APPLICATION	FACULTY OF ELECTRICAL ENGINEERING	SILVER
PROF.MADYA. DR. MUSSE MOHAMUD AHMED	SOO WAI LIAN	A NEW AUTOMATED COMPACT SUBSTATION FOR 415 V DISTRIBUTION SYSTEM IN MALAYSIA	FACULTY OF ELECTRICAL ENGINEERING	SILVER
SILAH HAYATI BINTI KAMSANI	NIK MOHD FARID BIN CHE ZAINAL ABIDIN, ABDUL 'ALIM BIN ABDULLAH	REMOTE SENSING WALKER	FACULTY OF MANUFACTURING ENGINEERING	SILVER
MOHD YUHAZRI BIN YAAKOB	MOHAMAD FADLIZAN BIN ROSNI, MOHD NOOR IKHWAN BIN MOHD FAUZI, MOHD ARSYAN BIN KAMARUZAMAN	GREEN NOIHEVI INSULATOR	FACULTY OF MANUFACTURING ENGINEERING	SILVER
FARAH SHAHNAZ FEROZ	WILLIAM TAM	FULLY AUTOMATIC SORTING MACHINE USING VISION BASED SYSTEM	FACULTY OF ELECTRONICS AND COMPUTER ENGINEERING	SILVER
AHMAD SADHIQIN BIN MOHD ISIRA	MOHD AZALI BIN ZAINAL ABIDIN, ZURIATIHA	SIGNAL INDICATOR FOR HOME APPLIANCES	FACULTY OF ELECTRONICS AND COMPUTER ENGINEERING	BRONZE
MOHD ZAKARIA BIN MOHAMAD NASIR	DR. KHISBULLAH HUDHA, UBAIDILLAH	LOW COST SUSPENSION TEST MACHINE	FACULTY OF MECHANICAL ENGINEERING	BRONZE
HERDY RUSNANDI	FAIZUL AKMAR B. ABDUL KADIR	ELECTRIC PARKING BRAKE	FACULTY OF MECHANICAL ENGINEERING	BRONZE
PROF. DR. NANNA SURYANA HERMAN	HABIBULLAH AKBAR, WAHYONO SAPTO WIDODO, ANTON SATRIA PRABUWONO, ZULKIFLI TAHIR, ADNAN	IMPROVEMENT OF PRODUCT QUALITY INSPECTION USING USER FRIENDLY AND LOW COST MACHINE VISION SYSTEM	FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY AND FACULTY OF	BRONZE
HABIBULLAH AKBAR	PROF. DR.NANNA SURYANA HERMAN, ANTON SATRIA PRABUWONO, ADNAN	EMBEDDED VISION TECHNOLOGY FOR SMART SCALE SYSTEM	FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY	BRONZE

UTeM Bagged 7 Medals During The 9th Malaysia Technology Expo (MTE) 2009

Seven from twelve projects showcased by UTeM researchers grabbed medals during The 8th Malaysia Technology Expo (MTE) held in Putra World Trade Centre from the 19th till 21st February 2009. 20 categories representing 450 participants from various agencies participate in this year's event. The young and dynamic researchers from UTeM won one gold medal, one silver medal and five bronze medals. The winners received the medals and certificates from The Malaysian Association of Research Scientists (MARS).

The 9th Malaysia Technology Expo (MTE) offers a wealth of new ideas, new solutions, and new opportunities. It is an exclusive promotional platform to market research product to potential investors and partners as well as to build brand and network with industry players.

PRINCIPAL	CO-RESEARCHERS	PROJECT TITLE	FACULTY	MEDAL
IR. ABDUL TALIB BIN DIN		ENVIRONMENTAL FRIENDLY LAKE OR RIVER CRUISE	FKM	GOLD
IMRAN MOHD IBRAHIM	NUR MARSYITAH BT YAAKOB, MOHAMMAD AFIQ BIN HASHIM, MOHD NOR BIN HUSAIN, MOHD AZIZI BIN ALI SABERI	LOW COST MICROWAVE ABSORBER	FKEKK	SILVER
DR. HAMZAH BIN SAKIDIN	DR. TAY CHOO CHUAN	SIMPLER UNBAB MAPPING FUNCTION FOR GLOBAL POSITIONING SYSTEM (GPS) TROPOSPHERIC	FKE	BRONZE
RANJIT SINGH S/O SARBAN SINGH	PROFESSOR HAMID HAMIDON, SANI IRWAN BIN MD SALIM, SIVA KUMAR S/O SUBRAMANIAM, SITI AISYAH BINTI ANAS	LOW COST INFRARED SENSOR CONTROLLED ENERGY SAVING	FKEKK	BRONZE
ADNAN RACHMAT	PROFESSOR DR. MD DAN MD PALIL, RUZAIDI ZAMRI, ANTON SATRIA, ZULKIFLI TAHIR, HABIBULLAH AKBAR, AHMAD YUSAIRI	AUTOMATIC WUDHU MACHINE BASED ON VISION	FKP	BRONZE
ZULKIFLI TAHIR	BURHANUDDIN M.A., ANTON S.P., HABIBULLAH AKBAR, ANOM B	WEB BASED MAINTENANCE DECISION SUPPORT SYSTEM FOR SMALL AND MEDIUM INDUSTRIES	FTMK	BRONZE
DR. KHISBULLAH HUDHA	ZULKIFFLI ABD KADIR, FAUZI AHMAD, MOHD ZAKARIA MOHD NASIR, FAIZUL AKMAR ABD KADIR, FITRIAN IMADUDDIN	PNEUMATICALLY ACTUATED ACTIVE ROLL CONTROL (ARC) SUSPENSION SYSTEM TO IMPROVE RIDE AND HANDLING QUALITIES OF AUTOMOTIVE VEHICLES	FKM	BRONZE

UTeM had send 50 delegation to the 3rd Malaysian Technical Universities Conference and Exhibition on Engineering and Technology (MUCEET) which was organized by Universiti Malaysia Pahang (UMP) on 20th till 22nd June 2009.

Malaysian Technical University Network (MTUN), which was formed through the understanding between four technical universities: UTeM, UTHM, UMP and UniMAP, hope that by conducting this Conference and Exhibition, the research products and finding of the member universities could be commercialized and meeting the industrials and consumers demand.

Besides that, MUCEET also act as a platform for academicians and researchers to exchange and share ideas while building network between them. 200 delegates were involve in this conference which was held in MS Garden Hotel, Kuantan.

Besides that, MUCEET also act as a platform for academicians and researchers to exchange and share ideas while building network between them. 200 delegates were involve in this conference which was held in MS Garden Hotel, Kuantan.

Emeritus Professor Dr. Takeshi Matsuura from University of Ottawa and Professor Youssef A. Shatilla from Massachusetts Institute of Technology (MIT) were the keynote speakers for MUCEET 2009 and four paperwork theme has been chosen namely, Manufacturing, Science and Engineering, Advance Technology and Humans Sciences & Management.

Parallel with the conference, an exhibition of research product was conducted in Berjaya Mega Mall which included 10 research products from each university and were displayed to the public.

Two presenters from UTeM, Dr. Hamzah bin Sakidin and Mr. Nur Rashid bin Mat Nuri@Mat Din were judged best presenters in their respective category and in the process winning RM 1000 each.

All the awards were presented by UMP Vice Chancellor, Professor Dato' Dr. Daing Nasir bin Ibrahim during MUCEET Dinner.

A service agreement between Universiti Teknikal Malaysia Melaka and Bank Perusahaan Kecil dan Sederhana Malaysia Berhad (SME Bank) was made on the 8th. of May 2009. Through the agreement, UTeM agrees to provide Certified Professional Technopreneurship Coaching Program (CPTC) and business consultancy to SME clients.

As a service provider, UTeM will guide and coach SME Bank clients to be successful entrepreneur and technopreneur by applying proper coaching methods.

The trainee will be required to complete 12 major CPTC modules to earn the certificate. The clients will also be guided in preparing business plan. The responsible centre for this agreement is MATDEC (Technopreneurship Development Centre) which is under Continous Learning Centre.

SME Bank

SMIDEC has elected MATDEC to be the Professional Training Provider under the Skill Enhancement Program for SME on 11th. August 2008. Related to that, an MoU was signed between Universiti Teknikal Malaysia Melaka and SMIDEC on 6th. May 2009 so that both parties will cooperate in conducting human resource development program and skill enhancement program to relevant industries which will be specified by SMIDEC. Among the courses that will be conducted are Creative Problem Solving, Financial Management, Six Sigma Methods, Kaizen, Effective Marketing and Project Management. SMEs which will be benefited from the program are from various service activities.

SMIDEC

Universiti Teknikal Malaysia Melaka and *Enetronics Sdn. Bhd.* have collaborated on the development of two telecommunication systems, namely Microwave Spectrum Surveillance System and Telecommunication Tower Info-based Systems.

An MoA was signed between both parties on the *23rd. February 2009*. The projects was approved by MOSTI on 24th. March 2009 to be funded under the Techno fund grant at the value of *RM1,500,000* for 24 months.

The projects is led by *Prof. Dr. Mohamad Kadim bin Suaidi* and *Eng. Imran bin Mohd. Ibrahim* from the *Faculty of Electronics Engineering and Computer Engineering* while Enetronics is represented by *Mr. Tan Heow Suang* and *Mr. Ang Kok Heng*.

Enetronics

The *Faculty of Electronics Engineering and Computer Engineering* of *Universiti Teknikal Malaysia Melaka* has collaborated with *AI Automation Sdn. Bhd.* in software development, industrial consultation and technical training and system customization and integration. The MoU was signed on the *17th. November 2008*.

AI Automation is a company which has its specialization in custom made software development, SCADA (System Control and Data Acquisition), PC based automation, remote telemetry, industrial technical training, short term training and consultancy services for improvement program. The collaboration is a benefit to researchers and students especially for the Faculty of Electronics Engineering and Computer Engineering to pursue research activities and industrial training with the company. Other faculties are also encouraged to do some research activities especially in manufacturing systems improvement and maintenance management system.

Ai automation

MEMORANDUM OF UNDERSTANDING (MOU) / MEMORANDUM OF AGREEMENT (MOA)

The MoU with CTRM is one of UTeM's success stories. We have renewed the term of MoU for the next three years starting 25th. February 2009. The Faculty of Manufacturing is in charged for the MoU.

CTRM is a company which has its specialization in manufacturing of composites aero structures. CTRM also provides engineering design services, composites assemblies, composites R&D, manufacturing of automotive composites structures and manufacturing of defence related equipments, including the Tactical Unmanned Aerial Vehicle.

Strategic partnering with CTRM is very relevant to UTeM's first thrust area which is manufacturing process, technology and design.

Under the MoU, UTeM and CTRM agree to continue some cooperation activities especially in research related to improvement of lean manufacturing. CTRM agrees to continue taking ten practical training students for each practical training period under its scholar program.

An MoU with FLUKE NETWORKS was signed on 17th. November 2008.

Through this MoU, FLUKE NETWORKS will assist UTeM in setting up the training lab facilities through the use of its relevant software, hardware and provision of training materials.

UTeM will continue to build up necessary equipment and facilities at the CCTT(Certified Cable Testing Technician)Lab as part of the curriculum development.

Subject to written approval by UTeM, FLUKE NETWORKS can use the UTeM – CCTT (Certified Cable Testing Technician) Lab at a nominal fee provided always that advance notice is given to UTeM 14 days prior to the usage date.

Faculty of Information Technology and Communication is in charged of this MoU.

The Memorandum of Understanding between Universiti Teknikal Malaysia Melaka and KRS Manufacturing & Industries (M) Sdn. Bhd. was made on the 12th of September 2008.

The MoU activities mainly focused on the design and manufacturing of a fuel saver device named ProS (Vehicle Professional Saver). The device was developed together by researchers from Faculty of Electrical Engineering and KRS researchers.

Among the MoU activities include evaluating and verifying the prototype product, improving on the PCB layout design, performing functional testing, producing technical report, product specifications and formulate performance criteria and providing expert advice and technical support relating to product design, patent search and application, and other commercialization issues.

On the 25th. of February 2009, Universiti Teknikal Malaysia Melaka had signed a Memorandum of Understanding with DreamEdge Sdn Bhd.

DreamEdge Sdn. Bhd. is a company which has its headquarter in Japan. Its services include Information Communication Technology solutions (ICT), Branding & Public Relations and Consultancy Services.

The cooperation with DreamEdge Sdn. Bhd. includes technical information/personnel exchange;
Technology transfer/training;
Joint technology development;
Joint technical service to industries; and pursuing and executing projects together as a team.

The activities of the MoU are undertaken by researchers from the Faculty of Mechanical Engineering and DreamEdge representatives.

UTeM Consultancy Services

The consultancy services rendered by the university are:

1. *Academic and Technical Training Services,*
2. *Facilities Management Services,*
3. *Professional Advice Services and*
4. *Contract Research.*

The consultants who are made up of the academic and professional staff of the university in the fields of mechanical engineering, manufacturing engineering, electrical, electronics and computer engineering, information and communication technology, social sciences and languages had rendered a total of 46 projects since the introduction of consultancy services in the year 2002. The annual number of projects and income is as follows:

YEAR	NUMBER OF PROJECTS	INCOME(RM)
2004	5	45,616.00
2005	4	59,250.00
2006	6	141,705.00
2007	19	243,667.00
2008	7	87,650.00
2009 (April)	3	11,107.00

The results of the services to the clients may in the form of an analysis, design, reports, papers, software or a product.

UTeM Holdings Sdn. Bhd., the commercial arm of the university had several ongoing consultancy projects that will contribute to generation of income to the university

THE LIST OF PROJECTS IN YEAR 2007:

NO	TITLE OF PROJECT	FACULTY	CLIENT	HEAD OF PROJECT	PROJECT COST
1.	Network Health Checkfor Ibu Pejabat Kem. Kesihatan Malaysia	FTMK	Digicity Sdn. Bhd., Melaka	Prof. Madya Dr. Shahrin bin Shahib	46,158.00
2.	Kem Booster FKP	PBPI	Fakulti Kejuruteraan Pembuatan, UTeM	Hj. Ismail bin Abdol Jalil	2,500.00
3.	Kursus Tenaga Pengajar IKM/KKTM	FKE	Institut Latihan Kakitangan MARA (ILHAM) Kuantan	Ing. Prof. Dr. Marizan bin Sulaiman	24,000.00
4.	Program Peningkatan Sahsiah Diri Pelajar FTMK	PBPI	Fakulti Teknologi Maklumat & Komunikasi, UTeM	Hj. Ismail bin Abdol Jalil	2,000.00
5.	Latihan Amali Sistem Pneumatik	FKE	SPACE -UTM	Ing. Prof. Dr. Marizan	1,344.00
6.	Fabricate and Supply Universal PCR Chip Heater Blocks, Sensor Plates and Chip Housing	FKP	Institut Penyelidikan Perubatan Molekular (INFOMM), USM	Ahmad Yusairi bin Bani Hashim	980.00
7.	IELTS Perparatory Course for UTeM Staff	PBPI	Universiti Teknikal Malaysia Melaka	Nik Rahila	2,000.00
8.	UTeM Network Health Check	FTMK	1. Kampus Induk, UTeM 2. Kampus Industri, UTeM	Prof Dr Shahrin bin Shahib	30,000.00
9.	Sewaan Makmal Hidraulik & Pneumatik	FKM	SPACE -UTM	Ahmad Nazim Abd Rahman	630.00
10.	PCRDisc Rotary Control System	FKP	Institut Penyelidikan Perubatan Molekular (INFOMM), USM	Ahmad Yusairi bin Bani Hashim	3,600.00
11.	PCR Disc Precision Machining	FKP	Institut Penyelidikan Perubatan Molekular (INFOMM), USM	Ahmad Yusairi bin Bani Hashim	1,650.00
12.	Contamination Analysis of Rails Part	FKP	Hisniaga Jaya Sdn. Bhd.	Zaleha binti Mustafa	500.00

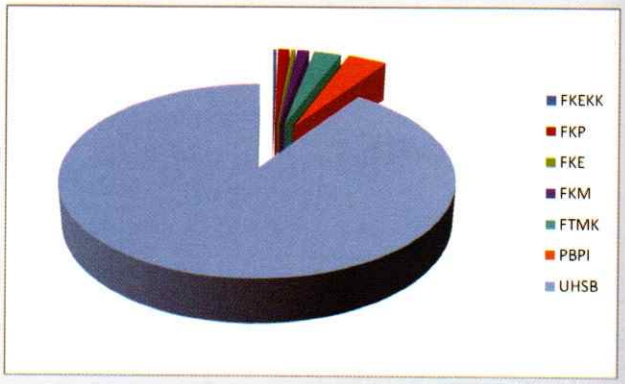
13.	Penulisan Buku Bekas Wakil Rakyat Negeri Melaka	PBPI	Majlis Bekas Wakil Rakyat Negeri Melaka	PM Dr. Hanipah binti Husin	42,000.00
14.	Kursus Pemasangan Firewall dan Content Filtering	FTMK	Kementerian Kesihatan Malaysia, Putrajaya	Prof. Dr. Shahrin bin Shahib	41,325.00
15.	Kem Booster 2 FKP	PBPI	Faakulti Kejuruteraan Pembuatan	Hj. Ismail bin Abdol Jalil	3,200.00
16.	Crack Propagation On The Composite Component	FKP	CTRM Aerocomposites Sdn. BHd.	Zaleha binti Mustafa	290.00
17.	Investigation on Failure of TNB Tower	FKM	Jabatan Kesihatan dan Keselamatan Pekerja, Melaka	Prof. Madya Dr. Md. Radzai bin Said	15,000.00
18.	Design Development & Training Consultancy for Envirobot	FKP	Akademi Caddcam Sdn. Bhd.	Shariman bin Abdullah	25,490.00

THE LIST OF PROJECTS IN YEAR 2008:

NO	TITLE OF PROJECT	FACULTY	CLIENT	HEAD OF PROJECT	PROJECT COST
1.	Renting of laboratory for training	FKM	Kosijaya Didactic Sdn. Bhd., Kuala Lumpur	Mohd Nazim bin Abdul Rahman	1,500.00
2.	Laser Cutting Technology Training Program	FKP	Pusat Latihan Teknologi Tinggi (ADTEC) Batu Pahat	Hassan bin Attan	12,000.00
3.	Kerja-Kerja Network Health Check di Ibu Pejabat BPR Putrajaya	FTMK	Digicity Sdn. Bhd., Melaka	Prof. Dr. Shahrin bin Sahib@ Sahabudin	46,000.00
4.	Penerapan Kemahiran Generik Di kalangan Pelatih	PBPI	Institut Latihan Kakitangan MARA Kuala Lumpur	Pn. Siti Rohana bt Omar	11,600.00
5.	Ujian Regangan	FKM	Steamline (M) Sdn Bhd Melaka	Prof. Dr. Radzai bin Said	300.00
6.	Trial Cut for Bombardier Program CL300	AMC	Previledge Precision Engineering Sdn Bhd Melaka	Baharudin bin Abu Bakar	2,000.00
7.	Latihan Praktikal Pelajar Kolej Kemahiran Tinggi MARA Alor Gajah Melaka	FKP	Kolej Kemahiran Tinggi MARA Alor Gajah (KKTM Alor Gajah) Melaka	Nik Mohd Farid bin Che Zainal Abidin	16,250.00

THE LIST OF PROJECTS IN YEAR 2009 (as of June 2009):

NO	TITLE OF PROJECT	FACULTY	CLIENT	HEAD OF PROJECT	PROJECT COST
1.	Regrinding Carbide Tooling (10 Nos)	AMC	Hampshire Aerospace Sdn Bhd	Baharudin bin Abu Bakar	238.00
2.	The Development of CAD Drawing for Air Motor	FKP	Science-Tech Solution Sdn Bhd	Mohammad Kamil bin Sued	2,868.75
3.	Insulation Testing : Type and Product Test	FKE	Excellift Sdn Bhd	Aminudin bin Aman	8,000.00



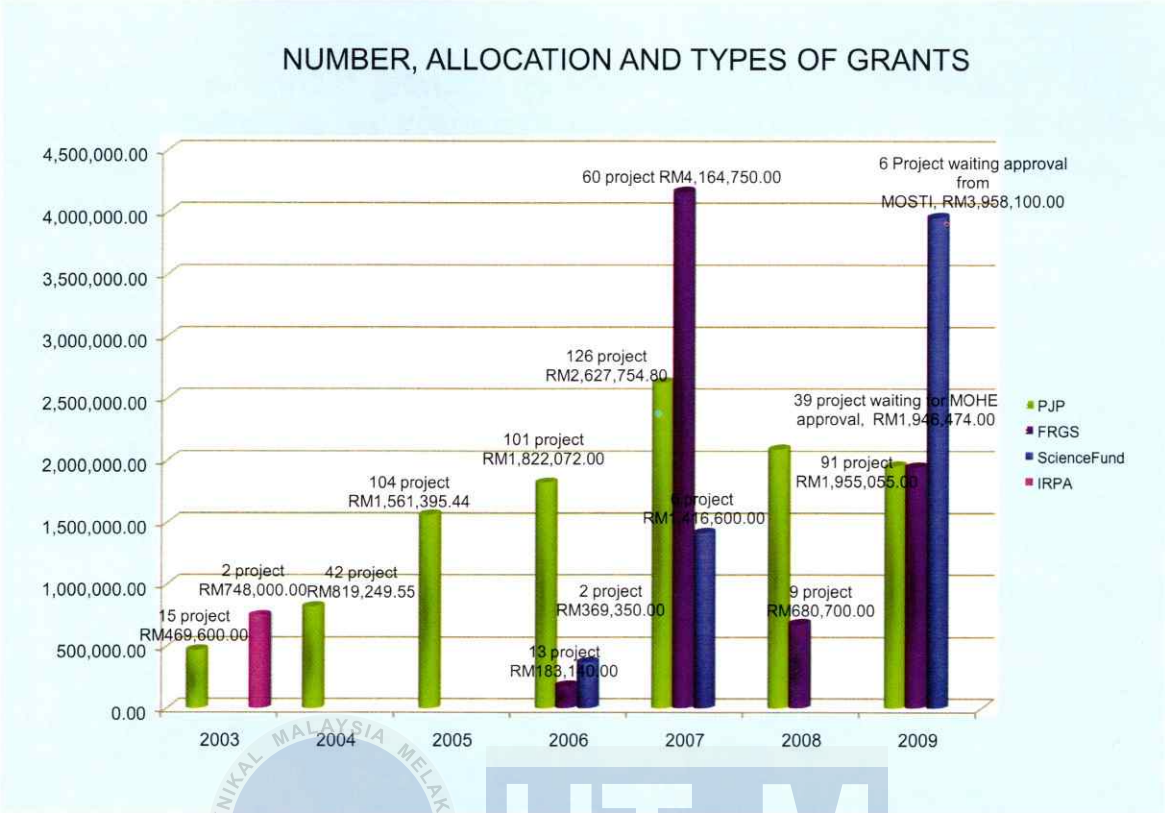
The chart shows the breakdown of income by faculties from 2004 -2009 (April)

Research and Innovation (R&I) in the area of science, technology and engineering are central to success in today's modern economy of a country. They are vital resources and strategic investments for increasing the capacity of the country to be more innovative and vibrant in our economic activities to face the challenges of the future. UTeM is committed to uphold the government's pledge to become a developed country status by the year 2020. For this, UTeM has equipped herself to be technologically and intellectually advanced to meet the national aspiration.

Research activities in UTeM started when the Ministry of Higher Education provided an allocation of RM500K for the short term grant in 2002. By 2009 the amount allocated for research and development activities under the various grants has exceeded RM18 million including several projects pending approval by the relevant grant funding agencies.

TOTAL RESEARCH GRANT

Nu.	Type of Grant	Number project Approved	Total Grant	Number of Project Pending	Total Amount
1	PJP 2002/2003	15	469,600.00		
	PJP 2003/2004	42	819,249.55		
	PJP 2005/2006	104	1,561,395.44		
	PJP 2006/2007	101	1,822,072.00		
	PJP 2007/2008	126	2,627,754.80		
	PJP 2008/2009	204	4,026,898.00		
	Total	**592**	**11,326,969.79**		
2	IRPA	2	748,000.00		
	Total	**2**	**748,000.00**		
3	FRGS 2006	13	183,140.00		
	FRGS 2007	60	4,164,750.00		
	FRGS 2008	9	680,700.00		
	FRGS 2009	39	1,946,474.00	#39	1,946,474.00
	Total	**121**	**5,028,590.00**		
4	Science Fund 2006	2	369,350.00		
	Science Fund 2007	6	1,416,600.00		
	Science Fund 2008	6	3,958,100.00	*6	3,958,100.00
	Total	**14**	**1,785,950.00**		
Grand Total		**729**	**18,889,509.79**	**43**	**5,904,574.00**



Research Projects under Science Fund (2007/2008)

No	Project Title	Researchers	Project number	Amount allocated	Period
1.	Fabrication of High Curie Temperature Anisotropic Strintium Ferrite Magnes Through Powder Metallurgy Technique	Dr. Azizah binti Shaaban - Zaleha Mustafa - Rosdi Ibrahim	03-01-14-SF0012	280,000.00	1 Sept 2007 – 31 Aug2009
2.	The Development of Multimedia Ubiquitous m-Learning System	Dr. Sazilah binti Salam - Mohammad Radzi Motsidi - Zulkiflee Muslim - Rusnida Romli - Norazlin Mohammed - Muhammad Haziq Lim Abdullah - Ibrahim Ahmad - Mohd Hafiz Zakaria - Farah Nadia Azman	01-01-14-SF0008	310,600.00	1 Sept 2007 – 29 Feb2009

No	Project Title	Researchers	Project number	Amount allocated	Period
3.	Maintenance Decision Support System for Small and Medium Industries Using Decision Making Models	Burhanuddin bin Mohd Aboobaider - Sazalinsyah Razali - Anton Satria Prabuwono	01-01-14-SF0009	103,260.00	1 Sept 2007 – 30 Aug2009
4.	A Novel Natural Approach To Euclidean TSP Engine For Manufacturing Application	Nor Azman bin Abu - Prof. Dr. Shahrin Sahib - Zuraida Abal Abas - Emaliana Kasmuri - Prof. Dr. Nanna Suryana Herman	06-01-14-SF0006	167,640.00	1 Okt 2007 – 31 Mac 2010
5.	Design and Development of Site-specific Throughput Predition Models for Wireless Mesh Networks	Prof. Dr. Mohamad Kadim b. Suaidi - Mohamad Zoinol Abidin Abd. Aziz - PM Abdul Rani Othman - Abd. Shukur Ja'afar - Mohd Riduan Ahmad - Muhammad Syahrir Johal - Imran Ibrahim - Ja'afar Adnan	01-01-14-SF0010	443,000.00	1 Sept 2007 – 31 Aug 2009
6.	Entrepreneur Development Model for Manufacturing Sector Among SMEs in Malaysia	Nor Ratna binti Masrom - Ahmad Rozelan Yunus - Murzidah Ahmad Murad - Prof. Dr. Salleh Yahya - Zulkeflee Abdullah - Mariam Miri Abdullah	06-01-14-SF0014	112,100.00	1 Sept 2007 – 30 April 2009

Research Projects under Fundamental Research Grant Scheme (2008)

No	Project Title	Researchers	Project No	Amount Allocated	Period
1.	Numericalanalysis-Based Visualization of Heat Distribution and Dissipation in Current-Carrying Conductors	Pn. Rahifa binti Ranom - Asri bin Din - Irma Wani binti Jamaludin - Mohd Rizuan bin Baharon - Muhamad Nizam Kamarudin - Alias Khamis - PM Dr. Zulkifilie Ibrahim	FRGS/2008/FKE (1)	114,000.00	1 Okt 2008 – 30 Sept 2011
2.	Determination of the Sound Absorption Coefficient for Local Woods	Dr. Janatul Islah binti Mohamad - Rainah binti Ismail - Prof. Ir. Dr. Mohd Jailani bin Mohd Nor (UKM) - Prof. Dr. Md. Radzai Said	FRGS/2008/FKM (1)	65,000.00	1 Okt 2008 – 30 Sept 2010
3.	The Study on the Performance Characteristics of a Modular Multiple Blade Panel for the Development of a Modular Vertical Wind Mill for Mini Power Generation Plant	Ir. Abdul Talib bin Din - Shamsul Bahari Azraai - Prof. Dr. Md Radzai Said	FRGS/2008/FKM (2)	86,200.00	1 Okt 2008 – 30 Okt 2010
4	The Effect on Jig Design on Hand Muscles Activities	Prof. Madya Dr. Adi Saptari - Isa bin Halim - Radin Zaid bin Radin Umar - Mr Raemy bin Md Zein	FRGS/2008/FKP (1)	70,000.00	1 Okt 2008 – 30 Sept 2010
5.	A Study on the Machinability of Titanium	Dr. Bagas Wardono - Dr. Mohd Rizal bin Salleh - Taufik - Dr. Lok Yian Yian	FRGS/2008/FKP (2)	80,000.00	1 Okt 2008 – 30 Sept 2010

No	Project Title	Researchers	Project No	Amount Allocated	Period
6.	Influence of Retrogression and Reaging (RRA) Heat Treatment Process on Microstructure, Mechanical Properties and Stress Corrosion Cracking (SCC) Susceptibility of Aluminium Alloy 7075	Intan Sharhida binti Othman - Mohamad Haidir bin Maslan	FRGS/2008/FKP (3)	82,000.00	1 Okt 2008 – 30 Sept 2010
7.	Mechanical Controls for Robotic-Inspired Foot-Ankle Mechanism	Ahmad Yusairi bin Bani Hashim - Noor Azuan bin Abu Osman (UM) - Wan Abu Bakar bin Wan Abas (UM)	FRGS/2008/FKP (4)	65,500.00	1 Okt 2008 – 30 Sept 2011
8.	An Assessment on the Effect of Different Characteristics of Matrices to Primal and Dual Solutions in Linear Programming Problems	Muzalna binti Mohd Jusoh - PM Dr. Adi Saptari - Rohana binti Abdullah	FRGS/2008/FKP (5)	64,000.00	1 Okt 2008 – 30 April 2010
9.	Mathematical Modelling of Stagnation Flow Towards a Shrinking Sheet	Dr. Lok Yian Yian - Anuar bin Mohd Ishak - Dr. Bagas Wardono	FRGS/2008/FKP (6)	54,000.00	1 Okt 2008 – 30 Sept 2010

SHORT TERM RESEARCH GRANTS FOR 2009 (FIRST ROUND)

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
1.	*Regangan Aktif Menggunakan Pengawal Optimal (Active Suspension Using Optimal Controller)*	Dr. Hamzah bin Sakidin Datuk Prof. Dr. Mohd Ruddin Ab Ghani En. Syed Najib Syed Salim Pn, Nor Sarizan binti Mat Youb	Industrial Automation and Robotics	PJP/2009/FKE(1C)	30,000.00	1 Mac 2009 – 31 Mac 2010
2.	*Simpler Mapping Function Model For Calculating GPS Troposheric Delay*	Dr. Hamzah bin Sakidin Datuk Prof. Dr. Mohd Ruddin Ab Ghani Prof. Madya Dr. Ismadi Bugis Dr. Tay Choo Chuan	Soft Skills for Engineers and Technologies	PJP/2009/FKE(2G)	20,000.00	1 Mac 2009 – 31 Mac 2010
3.	*Development of High Efficiency Solar Energy Source Three Phase Alternating Current Power Supply*	Md. Hairol Nizam bin Talib Dr. Ismadi Bugis En. Muhammad Nizam bin Kamarudin En. Sharin bin Ab Ghani	Automotive Engineering and Energy	PJP/2009/FKE(3B)	20,500.00	1 Mac 2009 – 31 Mac 2010
4.	*Effectiveness of GPS Implementation on Mobile Robot*	Ahmad Zaki bin Hj. Shukor En. Muhammad Herman bin Jamaluddin	Industrial Automation and Robotics	PJP/2009/FKE(4C)	24,400.00	1 Mac 2009 – 31 Mac 2010
5.	*Omni-Directional Mobile Robot Drive (OMRD)*	Fazlli bin Patkar En. Ahmad Zaki bin Hj Shukor En. Shahrudin bin Zakaria En. Muhammad Herman bin Jamaluddin	Industrial Automation and Robotics	PJP/2009/FKE(5C)	27,400.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
6.	*Design of Three Phase Multi Frequency Inverter*	Fairul Azhar bin Abdul Shukor En. Ahmad Zaki bin Hj Shukor En. Muhammad Herman bin Jamaluddin	Industrial Automation and Robotics	PJP/2009/FKE(6C)	23,460.00	1 Mac 2009 – 31 Mac 2010
7.	*Design and Development of Multi-Input Sensor Algorithm for Autonomous Underwater Vehicle (AUV) Applications*	Mohd Shahrieel bin Mohd Aras En. Hyreil Anuar bin Kasdirin En. Muhammad Herman bin Jamaluddin	Industrial Automation and Robotics	PJP/2009/FKE(7C)	20,000.00	1 Mac 2009 – 31 Mac 2010
8.	*Impelementing Wireless Sensor Network in Asset Tracking and Monitoring in Manufacturing Environment*	Zulhani bin Rasin En. Mohd Hanif bin Che Hasan En. Syahrul Hisham bin Mohamad @ Abd. Rahman En. Mustafa bin Manap	Industrial Automation and Robotics	PJP/2009/FKE(8C)	20,000.00	1 Mac 2009 – 31 Mac 2010
9.	*Design and Develop Wireless Based Control of Industrial Robotics*	Sulaiman bin Sabikan En. Ahmad Zubir bin Jamil En. Mohd Syakrani bin Akhbar	Industrial Automation and Robotics	PJP/2009/FKE(9C)	20,000.00	1 Mac 2009 – 31 Mac 2010
10.	*Design and Develop An Autonomous UAV Airship for Indoor Surveillance and Monitoring Applications*	Hairol Nizam bin Mohd Shah En. Mohd Fairus Abdollah En. Mohd Rizuan Baharon En. Mohd Hanif Che Hassan	Industrial Automation and Robotics	PJP/2009/FKE(10C)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
11.	*Gyroscope-integrated Mobile Robot*	Nur Ilyana binti Anwar Apandi En. Fairul Azhar Shukor En. Muhammad Herman bin Jamaluddin En. Ahmad Zaki Shukor En. Shahrudin bin Zakaria	Industrial Automation and Robotics	PJP/2009/FKE(11C)	23,300.00	1 Mac 2009 – 31 Mac 2010
12.	*Short Term Load Forecasting With Artificial Neural Network Algorithm*	Intan Azmira binti Wan Abdul Razak Pn. Aziah bt Khamis Pn. Elia Erwani binti Hassan En. Alias bin Khamis En. Mohd Shahrieel Mohd Aras	Automotive Engineering and Energy	PJP/2009/FKE(12B)	20,000.00	1 Mac 2009 – 31 Mac 2010
13.	*Design and Development of Solar-Powered Mover*	Aziah binti Khamis En. Kyairul Azmi bin Baharin En. Hyreil Anuar bin Kasdirin En. Azhan bin Ab. Rahman Pn. Nur Hakimah binti Ab. Aziz	Automotive Engineering and Energy	PJP/2009/FKE(13B)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
14.	*The Study On The Characteristics And Limitations Of Pneumatic Lift For The Buildings Of 4 Storey And Below For The Development Of A Low Cost And Safe Pneumatic Personal Lift*	Ir. Abdul Talib bin Din Prof. Dr. Md. Radzai b. Said Prof. Madya Ir. Mustafar b. Abdul Kadir	Manufacturing Process, Technology and Design	PJP/2009/FKM(1A)	30,000.00	1 Mac 2009 – 31 Mac 2010
15.	*Development of Low Power Split Unit Air Conditioning by Using Thermal Energy Storage System*	Safarudin Gazali Herawan En. Mohd Zaid bin Akop En. Suhaimi bin Misha	Automotive Engineering and Energy	PJP/2009/FKM(2B)	20,000.00	1 Mac 2009 – 31 Mac 2010
16.	*Development an Automotive Active Front Bumper for Crash Energy Absorption*	Nur Rashid bin Mat Nuri @ Md. Din Dr. Khisbullah Hudha En. Mohd Zakaria bin Mohamad Nasir En. Faizul Akmar bin Abdul Kadir	Automotive Engineering and Energy	PJP/2009/FKM(3B)	30,000.00	1 Mac 2009 – 31 Mac 2010
17.	*The Improvement On The Existing Motorcycle Rim Adjusting Jig*	Masjuri bin Musa @ Othman En. Mohd. Ruzi bin Harun En. Sulaiman bin Sabikan En. Wan Mohd. Farid bin Wan Mohamad	Manufacturing Process, Technology and Design	PJP/2009/FKM(4A)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
18.	*Study Of Heat Exchanger Effects On Car Air-Conditioning System*	Faizil bin Wasbari En. Mohamad Firdaus bin Sukri En. Nazri bin Md. Daud	Automotive Engineering and Energy	PJP/2009/FKM(5B)	20,000.00	1 Mac 2009 – 31 Mac 2010
19.	*Preliminary Design and Fabrication of Test Samples for Ultrasonic Testing*	Zakiah binti Abdul Halim En. Mohd Rizal bin Roosli	Manufacturing Process, Technology and Design	PJP/2009/FKM(6A)	20,000.00	1 Mac 2009 – 31 Mac 2010
20.	*The Effect of Catalysts In Used Frying Oil Biodiesel to The Diesel Engine Performance*	Mahanum binti Mohd Zamberi Prof. Dr. Md. Razali bin Ayob En. Mohd Zulkifli bin Ibrahim	Automotive Engineering and Energy	PJP/2009/FKM(7B)	30,000.00	1 Mac 2009 – 31 Mac 2010
21.	*Development and Mechanical Testing of Wood Plastic Composite (WPC) Made of Recycled Polymer and Recycled Wood Flour*	Jeeferie bin Abd. Razak Prof. Dr. Mohd. Razali bin Muhamad Prof. Dr. Md. Dan bin Md. Palil Dr. Azizah binti Shaaban En. Mohd Fairuz bin Dimin En. Mohd. Haizal bin Hussein Pn. Intan Sharnida binti Othman	Manufacturing Process, Technology and Design	PJP/2009/FKP(1A)	25,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
22.	*Study of The Influence of Coupling Agent and Additives on The Mechanical Properties of Wood Plastic Composite*	Mohd Fairuz bin Dimin @ Mohd Amin Prof. Dr. Mohd Razali Mohamad Prof. Dr. Md. Dan bin Md Palil En. Jeefferie bin Abd Razak En. Mohd Haizal bin Hussein Pn. Intan Sharnida binti Othman	Manufacturing Process, Technology and Design	PJP/2009/FKP(2A)	25,000.00	1 Mac 2009 – 31 Mac 2010
23.	*Investigation of The Effect of Shot Peening on The Fatigue Strength of Alluminum Alloy*	Ammar bin Abd Rahman En. Mohamad Haidir Maslan	Manufacturing Process, Technology and Design	PJP/2009/FKP(3A)	10,000.00	1 Mac 2009 – 31 Mac 2010
24.	*Design of New Punch Geometry to Reduce Force in Sheet Metal Piercing Process*	Wahyono Sapto Widodo En. Tajul Ariffin Abdullah En. Johny Purnomo	Manufacturing Process, Technology and Design	PJP/2009/FKP(4A)	10,000.00	1 Mac 2009 – 31 Mac 2010
25.	*Design and Analysis of Production Tooling for Metal Matrix Composite by Investment Casting*	Taufik En. Tajul Ariffin Abdullah	Manufacturing Process, Technology and Design	PJP/2009/FKP(5A)	10,000.00	1 Mac 2009 – 31 Mac 2010
26.	*The Dimensional Information Extration From Cloud of Points*	Mohammad Kamil bin Sued En. Saifufin Hafiz b. Yahya En. Mohd. Shukor b. Salleh	Manufacturing Process, Technology and Design	PJP/2009/FKP(6A)	10,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
27.	*Rebust Motion Controller Design and Accurate Positioning System for A Sliding Table*	Zamberi bin Jamaludin En. Shariman b. Abdullah Pn. Nur Aidawaty bt. Rafan	Industrial Automation and Robotics	PJP/2009/FKP(7C)	20,000.00	1 Mac 2009 – 31 Mac 2010
28.	*Engineering of Mechanical Control Kit For Unmanned Grass Cutter*	Sivarao a/l Subramonian En. Mohd Amri Sulaiman En. Mohd Shahrir Kassim En. Khairol Anuar Rakiman En. Taufik En. Lokman Abdullah	Manufacturing Process, Technology and Design	PJP/2009/FKP(8A)	31,500.00	1 Mac 2009 – 31 Mac 2010
29.	*Acoustic Communication for remote Operating Vehicle (ROV)*	Dato' Prof. Dr. Mohd Nor bin Husain Engr. Imran Mohd Ibrahim	Communication and Computer Engineering	PJP/2009/FKEKK(1D)	30,000.00	1 Mac 2009 – 31 Mac 2010
30.	*Compact Multiband Antenna Design for RFID Application*	Prof. Dr. Mohamad Kadim bin Suaidi Engr. Imran bin Mohd Ibrahim Pn. Maisarah binti Abu	Communication and Computer Engineering	PJP/2009/FKEKK(2D)	35,600.00	1 Mac 2009 – 31 Mac 2010
31.	*A Direct Conversion RF Front-End Receiver for 5.8 GHz WLAN Applications*	Engr. Imran bin Mohd Ibrahim En. Noor Azwan bin Shairi Prof. Madya Abdul Rani bin Othman	Communication and Computer Engineering	PJP/2009/FKEKK(3D)	29,600.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
32.	*Design and Fabrication of Rectangular Waveguide Bandpass Filter*	Dr. Badrul Hisham bin Ahmad En. Noor Azwan bin Shairi En. Redzuan Abdul Manap	Communication and Computer Engineering	PJP/2009/FKEKK(4D)	20,000.00 + 15,600.00 35,600.00	1 Mac 2009 – 31 Mac 2010
33.	*Cooperative MIMO Communications in Mireless Sensor Networks*	Mohd Riduan bin Ahmad En. Mohamad Zoinol Abidin bin Abd. Aziz	Communication and Computer Engineering	PJP/2009/FKEKK(5D)	25,000.00	1 Mac 2009 – 31 Mac 2010
34.	*Performance Analysis of Fast Block-Matching Algorithms in Motion Estimation*	Redzuan bin Abdul Manap Dr. Badrul Hisham Ahmad En. Zulkifli Shariff	Communication and Computer Engineering	PJP/2009/FKEKK(6D)	8,000.00	1 Mac 2009 – 31 Mac 2010
35.	*Defected Ground Structure (DGS) in Low Power SPDT RF Switch Design for WIMAX Application at 2GHz Frequency Band*	Noor Azwan bin Shairi Dr. Badrul Hisham bin Ahmad En. Mohamad Zoinol Abidin bin Abd. Aziz	Communication and Computer Engineering	PJP/2009/FKEKK(7D)	20,000.00	1 Mac 2009 – 31 Mac 2010
36.	*Solution to Housefly Menace in UTeM*	Tan Kim See Datuk Prof. Madya Dr. Abu Bakar bin Mohamad Diah Engr. Imran b. Mohd Ibrahim En. Siva Kumar a/l Subramanian	Communication and Computer Engineering	PJP/2009/FKEKK(8D)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
37.	*Analysis on The Performance of The Long-Wavelength Vertical-Cavity Surface-Emitting Laser*	David Yap Fook Weng Pn. Noor Shahida binti Mohd Kasim Pn. Wong Yan Chiew Pn. Ngo Hea Choon	Communication and Computer Engineering	PJP/2009/FKEKK(9D)	20,000.00	1 Mac 2009 – 31 Mac 2010
38.	*Hexagon-Diamond Grid System for Motion Tracking*	Ranjit Singh a/l Sarban Singh En. Sani Irwan bin Md. Salim En. Siva Kumar a/l Subramaniam	Communication and Computer Engineering	PJP/2009/FKEKK(10D)	20,000.00	1 Mac 2009 – 31 Mac 2010
39.	*Mobile Signal Cancellation Device*	Siti Normi binti Zabri @ Suhaimi Pn. Noor Shahida bt Mohd Kasim En. David Yap Fook Weng	Communication and Computer Engineering	PJP/2009/FKEKK(11D)	17,000.00	1 Mac 2009 – 31 Mac 2010
40.	*Performance Analysis on Decoding Algorithms of Turbo Codes*	Noor Shahida binti Mohd Kasim Pn. Siti Normi Zabri @ Suhaimi Pn. Siti Rosmaniza Ab Rashid En. David Yap Fook Weng	Communication and Computer Engineering	PJP/2009/FKEKK(12D)	10,000.00	1 Mac 2009 – 31 Mac 2010
41.	*Optical Communication Interface With Sharc ADSP - 21065L*	Zaiton binti Abdul Mutalip En. Azhari bin Salleh	Communication and Computer Engineering	PJP/2009/FKEKK(13D)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
42.	*A Study of 3D Feature Extraction Using Low-End USB Camera for Industrial Inspection*	Prof. Dr. Nanna Suryana Herman		PJP/2009/FTMK (1E)	30,000.00	1 Mac 2009 – 31 Mac 2010
43.	*The Development of Speech Learning Courseware For Down's Syndrome Children*	Muhammad Haziq Lim bin Abdullah Dr. Syariffanor binti Hisham En. Shahril bin Parumo	Advance Computing Technologies	PJP/2009/FTMK (2E)	29,350.00	1 Mac 2009 – 31 Mac 2010
44.	*Implementation of DNS in IPv6 Network Environment using Test6-DNS*	Nor Azman bin Mat Ariff En. Emran bin Hamid En. Nazrulazhar bin Bahaman	Advance Computing Technologies	PJP/2009/FTMK (3E)	24,650.00	1 Mac 2009 – 31 Mac 2010
45.	*E-Maintenance System Based on Condition Monitoring: An Approach to Real Time Sensor*	Ariff bin Idris En. Abd Samad bin Hasan Basari Prof. Dr. Nanna Suryana Herman	Advance Computing Technologies	PJP/2009/FTMK (4E)	30,000.00	1 Mac 2009 – 31 Mac 2010 – Tangguh 1 Jun 2009 – 30 Jun 2009
46.	*Development of Autonomous Web Server Administrator (AWSA)*	Mohd Zaki bin Mas'ud En. Mohd Faizal Abdollah En. Asrul Hadi Yaacob	Communication and Computer Engineering	PJP/2009/FTMK (5D)	24,620.00	1 Mac 2009 – 31 Mac 2010
47.	*Game Based Learning Courseware for Dyslexics*	Syariffanor binti Hisham En. Muhammad Haziq Lim Abdullah En. Shahril Parumo	Advance Computing Technologies	PJP/2009/FTMK (6E)	28,300.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
48.	*Trace Map Model for Digital Forensic Investigation Process*	Irda binti Roslan En. Mohd Zaki bin Mas'ud Pn. Siti Rahayu Selamat Pn. Robiah Yusof En. Mohd Faizal Abdollah	Advance Computing Technologies	PJP/2009/FTMK (7E)	19,510.00	1 Mac 2009 – 31 Mac 2010
49.	*Malware Intrusion Detection Through Profiling of Intrusion Detection Techniques*	Marliza binti Ramly Pn. Robiah Yusof Pn. Siti Rahayu Selamat En. Mohd Zaki Mas'ud En. Mohd Faizal Abdollah	Communication and Computer Engineering	PJP/2009/FTMK (8D)	22,220.00	1 Mac 2009 – 31 Mac 2010
50.	*Web Search Engine Evaluation Methodology*	Siti Mastura binti Baharudin Dr. Abdul Samad b. Shibghatullah Pn. Nor Haslinda b. Ismail	Communication and Computer Engineering	PJP/2009/FTMK (9D)	18,500.00	1 Mac 2009 – 31 Mac 2010
51.	*Interactive Reading Tool for Preschool-Aged Children: A Phonetic Approach*	Farah Nadia binti Azman En. Mohamad Lutfi Dolhalit En. Shahril bin Parumo	Communication and Computer Engineering	PJP/2009/FTMK (10D)	20,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
52.	*Diffusion of Telecommunication in Malaysia: Consumer Decision Making on Technology Adoption*	Dr. Md. Nor Hayati bin Tahir En. Mohd Fazli bin Mohd Som	Technology Management and Entrepreneurship	PJP/2009/IPTK (1F)	20,000.00	1 Mac 2009 – 31 Mac 2010
53.	*Usage of ICT Application: Information Sharing at Different Level of Product Development Processes in The Malaysian Industry*	En. Mohd Fazli bin Mohd Som Dr. Md. Nor Hayati bin Tahir	Technology Management and Entrepreneurship	PJP/2009/IPTK (2F)	20,000.00	1 Mac 2009 – 31 Mac 2010
54.	*Impak Teknik Seni Batik ke Atas Bahan Penghasilan Batik di Pasaran*	Prof. Madya Dr. Hanipah binti Hussin Datuk Prof. Madya Dr. Abu Bakar bin Mohamad Diah Pn. Syaril Nadiah Hamdan Pn. Rabiatul Adawiah Ab. Aziz Pn. Siti Balqish Ab. Aziz	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (1G)	30,000.00	1 Mac 2009 – 31 Mac 2010
55.	*Kajian Keperluan Bagi Meningkatkan Penguasaan Berbahasa Inggeris di Kalangan Staf Akademik di UTeM*	Dr. Izaidin bin Abdul Majid Prof. Dr. Hj. Mohd Taib b. Hj. Dora Pn. Muliati binti Sidek En. Hj. Mohd. Fauzi b. Kamarudin	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (2G)	7,500.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
56.	*Kajian Mengenai Paten dan Isu-isu Pelancongan di Melaka*	Prof. Dr. Hj. Mohd. Taib b. Hj. Dora En. Ahmad Jawahir bin Tugimin En. Rosli bin Saadan	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (3G)	27,500.00	1 Mac 2009 – 31 Mac 2010
57.	*Impak Pembangunan Universiti Teknikal Malaysia Melaka (UTeM) Ke Atas Pembangunan Fizikal Negeri Melaka*	Ahmad Ridzwan bin Mohd Noor		PJP/2009/PBPI (4G)	9,000.00	1 Mac 2009 – 31 Mac 2010
58.	*Tahap Pengetahuan Kecergasan Fizikal Di Kalangan Pelajar-Pelajar Universiti : Satu Tinjauan Di Universiti Teknikal Malaysia*	Rosli bin Saadan En. Ahmad Jawahir bin Tugimin En. Muhd Akmal Noor bin Rajikon Pn. Noor Maslian bt. Othman	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (5G)	9,745.00	1 Mac 2009 – 31 Mac 2010
59.	*Hubungan Antara Tekanan Kerja dan Kepuasan Kerja Guru Dengan Kecemerlangan Sekolah Menengah Agama Kerajaan Negeri Melaka*	Ahmad Jawahir bin Tugimin En. Rosli bin Saadan Pn. Asiah binti Hj Mohd Pilus En. Aziz bin Yahya	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (6G)	9,000.00	1 Mac 2009 – 31 Mac 2010

No	Project Title	Researchers	Thrust Area	Project No	Amount Allocated	Period
60.	*Influence of Strategic Communication on Knowledge Transfer*	Aziz bin Yahya Pn. Hazmilah Hasan Pn. Kalthom Husain En. Ahmad Jawahir bin Tugimin	Soft Skills for Engineers and Technologies	PJP/2009/PBPI (7G)	9,500.00	1 Mac 2009 – 31 Mac 2010
61.	*Media Alternatif Dalam Mempengaruhi Pola Pengundian Pilihanraya Ke-12 Pada Mac 2008 di Melaka*	Siti Rohana binti Omar Prof. Dr. Hj. Mohd. Taib b. Hj. Dora Pn. Hazmilah bt Hassan Nor Fazilah bt Hamid		PJP/2009/PBPI (8G)	18,000.00	1 Mac 2009 – 31 Mac 2010

Design and Development of Site-specific Throughput Prediction Models for Wireless Mesh Networks

Mohamad Kadim Suaidi, Riduan Ahmad, Mohamad Zoinol Abidin Abd. Aziz, Abdul Rani Othman, Abd. Shukur Ja'afar, Mohd Riduan Ahmad, Muhammad Syahrir Johal, Imran Ibrahim, Ja'afar Adnan

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Abstract

Currently there is no predictions models design specifically for Wireless Mesh Networks (WMNs). The existing model is designed simply for prediction of IEEE 802.11b/g standard or the WLAN configuration. This project will focus on ray-tracing algorithm development to predict the Received Signal Strength Indicator (RSSI) for a mesh network configuration at site specific (FKEKK UTeM).

1. Introduction

There has been intense interest in the worldwide deployment of wireless mesh networks (WMN) during the past few years. Wireless mesh networks that provide high-speed data services for large areas are becoming popular at university campuses, hotels, restaurants, and other public and private sites. Along with wireless mesh networks deployment, the wireless user is also expected to expand dramatically. Therefore, it is evident that wireless mesh networks will be an important component in next generation communication infrastructure. Despite this phenomenal growth and optimistic outlook, however, there are surprisingly few research works that address the issues appearing in the design and deployment of wireless mesh networks. In order to implement WMN at specific location, an exposure to antenna and propagation issues is a vital. Then, the access points could not be installed by trial and error approach because of the different protocols that govern the systems and operations among them. So here it is obvious that the wireless network performances also could not be benchmarked by using wired network tools. Other than that, lack of wireless channel knowledge and wrong network planning approach led to the poor coverage and service problems. Therefore, mechanisms or models that include the propagation mechanisms are needed to predict wireless channel related loss and interference for wireless networks performance benchmarking purposes at specific sites. With that, this project will come out with an algorithm for wireless mesh networks design and throughput prediction model based-on site-specific that can assist to predict the best coverage and location for access point deployment for WMN configuration.

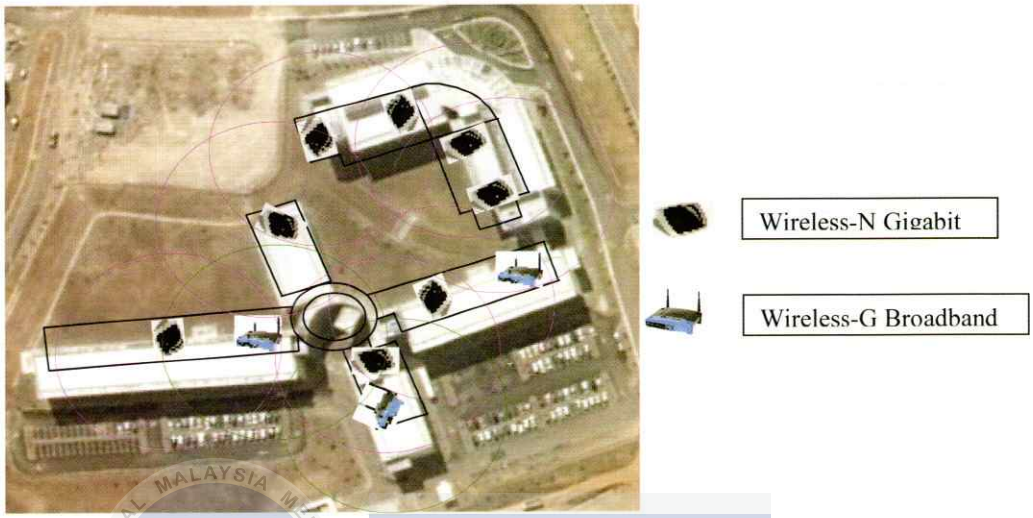

Figure 3: Network System Model by using IEEE 802.11g, n Standard Radio for the Site-specific (FKEKK UTeM Main Campus) for RSSI Prediction

2. Algorithm Development

Traditionally, propagation modeling provides two types of parameters: large-scale path loss and small-scale fading statistics. The path-loss information is vital in the optimization of the base-station location. Small-scale fading statistics provide information on the local field variations, thus helping in the site planning to improve coverage and interference, and to address multipath issues. Recently, more parameters, such as angle of arrival/departure, are required for wireless systems employing multiple antennas. Without reliable site-specific propagation modeling, these parameters can only be found either through estimation or through extensive field measurements. However, taking field measurements can be costly, difficult (to make accurate measurements), and time consuming, which translates into costly service for the consumer. Simulation-based site-specific propagation modeling can save time and money, and can also provide the same parameters required in the design of wireless communication systems, which are otherwise only found through actual field measurements. In this project, a test-bed has been setup using several routers. It has been configure to form mesh network topology for the site specific (FKEKK UTeM) by using Wireless Distribution System (WDS) features. During the measurement campaign, there are some considerations that must be taken into account. First, it must be carried out for different scenarios such as single and multi-floor in order to investigate the path loss characteristic at different floor. This is because the base station placement at the same level, higher or lower than the mobile station will affect the RSSI. On the other hand, it requires considering the indoor and outdoor propagation characteristics such as multi-path and Doppler-shift effect that will affect the measurement of the RSSI. The flow charts in figure 4depicted the whole process of the ray-tracing algorithm development that will be implemented in MATLAB to determine the ray intersection test and to obtain the RSSI.

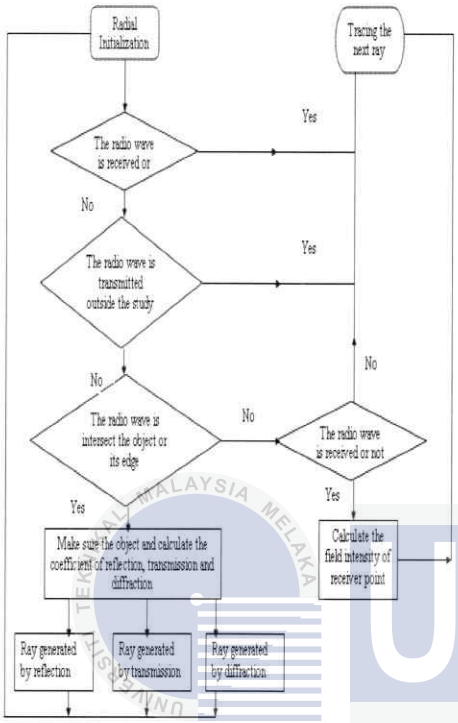

Figure 4: Flow chart of ray-tracing algorithm

4. Conclusion

From the results obtained, it shows that RSSI is important in order to determine the best location for the base station. So there will be no more costly and time consuming measurement work to be conducted for a wireless network deployment at a site specific.

Acknowledgements

The authors would like to acknowledge the support of National Science Fund Project, MOSTI (grant no. 01-01-14-SF0010/L0009) postgraduate students and research assistants of the project for FKEKK UTeM.

Fabrication of High Curie Temperature Anisotropic Strontium Ferrite Magnets Through Powder Metallurgy Technique

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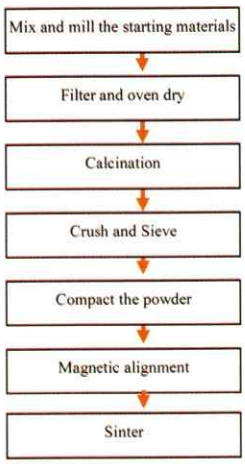
1. Introduction

Strontium ferrite with chemical formulae $SrO.6Fe_2O_3$ is a magnetic material. It is used as permanent magnet for motors in electric and electronic industries. Powder metallurgy is an established conventional method for ferrite powder processing. Although the technology is relatively old, products made using this technique are still in widespread use. Ferrites are produced by this technique as the processing procedures can be done under normal environment without oxidation problem. With a combination of a dry and wet method permits low manufacturing cost and ease process for ferrite magnets.

As presented in Figure 1, a method of making sintered Sr-ferrite permanent magnets through powder metallurgy takes place by a mixing of two starting materials i.e. iron oxide and strontium carbonate, homogeneously followed by a subsequent thermal treatment to chemically bond the particles together. The resulting powder is finally ground, shaped, magnetically aligned and sintered.



2. Powder Milling

As established theoretically, particles with smaller particle size have higher surface energy that enhances inter-diffusion of atoms, particularly important in the solid state reaction. It is therefore important to produce fine powders at narrow particle size distribution. In general, milling could reduced particle size to the level of below 5 microns unfortunately reports on the milling of magnetic powders are hardly found. This part of experimental work explore the effectiveness of milling, both planetary and roller mill, in reducing the particle size and get narrow size distribution for the calcined ferrite powder materials.

Calcination process caused particles to combine and growth, and become harder. Conversion of calcined ferrite into fine powder through milling process requires strong impact which may achieved from particles-to-particles, particles-to-balls and particles-to-wall collisions. These collisions give reduction in size and alter the shape of particles as seen in Figure 2 (a) and (b) below. Figure 3 presents the particle size distribution of the respective powders. After 8 hrs milling time a tremendous reduction in particle size is observed and the curve is shifted to the left side. A longer milling time might be needed to further reduce the size and separate agglomerated particles.

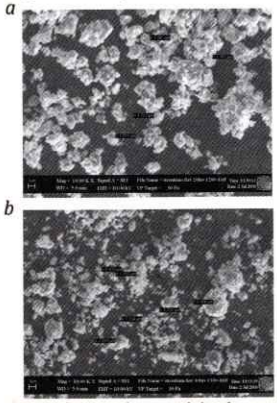


Figure 2: SEM micrographs on calcined materials after (a) 4 hr and

(b) 8 hr planetary milling

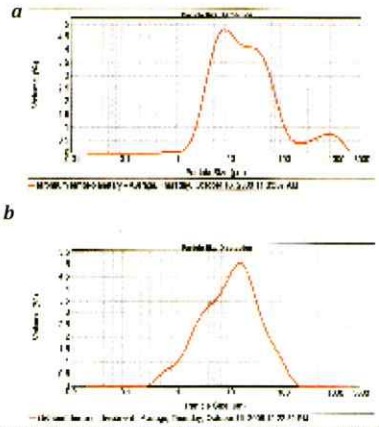


Figure 3: Spectrums of particle size distribution of Sr-ferrites after (a) 4h (b) 8h treated by planetary milling

3. Compacted and Aligned Products

One of the critical factors for a production of sintered products with good magnetic properties is that the specimens should consist of magnetic grains in a range of a single domain size that is around 1μm. These magnetic grains need to be aligned which can be done using a strong external magnetic field, apply simultaneously during compressing the powder into a cylindrical shape. Figure 4 shows the schematic diagram of the sintered cylindrical specimens after been cut into several pieces for further detail analyses. These specimens contain grains with magnetic domains preferred at one direction. The domain patterns captured using the Kerr effect optical microscopy is shown in Figure 5.

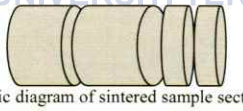


Figure 4 Schematic diagram of sintered sample sectioned into several parts

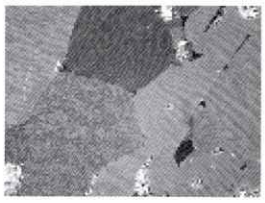


Figure 5 Grains with magnetic domains.

The bulk magnetic properties are usually presented through a hysteresis plot of magnetic induction B or $\mu_o M$ at various applied field strengths H. The hysteresis, in a four quadrant magnetisation curve provides most of the useful parameters required for a magnet, including remanence (B_r), extrinsic coercivity ($_bH_c$), intrinsic coercivity ($_iH_c$), maximum energy product ($(BH)_{max}$) and the loop squareness. These parameters are extracted from the second quadrant of hysteresis loop as displayed in Figure 5.

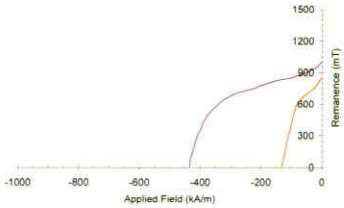


Figure 5 Demagnetisation curves of two magnets having low and high sintered density.

5. Conclusions

Some technical information for the production of a major permanent magnetic phase of strontium ferrite $SrFe_{12}O_{19}$ through the conventionally powder metallurgy route are briefly presented here. The secondary soft magnetic phase of iron oxide although in a very small proportion should not exist within the hard magnetic phase throughout the material in order to achieve high magnetic properties of sintered products.

Acknowledgement

We would particularly like to thank MOSTI for funding this research work under a Science Fund Research Grant (03-01-14 SF 0012).

Database Schema Integration to Support Semantic Translator Engine Development in Interoperable GIS Application

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1. Introduction

From observation it becomes apparent that rapid development of Internet technology support different data and information to be easily available and more accessible widely and freely. However those data are not always useable for other users due to lack of interoperability and compatibility. In addition to this, information sharing between two or more GIS platforms have not been fully implemented. For this reason, unnecessary redundant spatial data acquisition conducted by different GIS users becomes unavoidably occurred. Data acquisition is usually very costly and time consuming. Several vendors have introduced export and import conversion machine. However it has been found as the main cause of losing too much data and accuracy. Editing spatial data is also problematic.

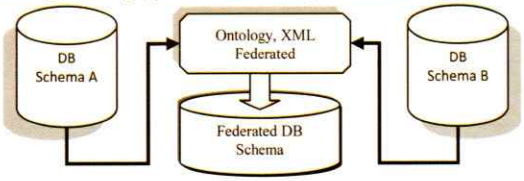

Figure 1 Integration Schema Framework.

As presented in Figure 1 this research discusses the integration of two different database schemas to produce a common interoperable database format. Figure 2 below shows the nature of existing information.

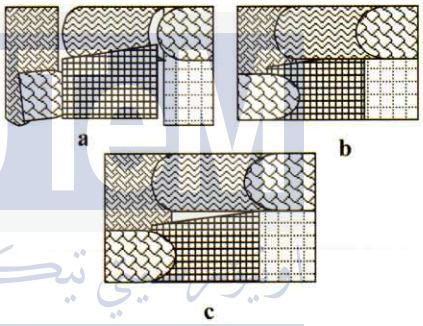

Figure 2 Integration of pieces of information. (a) illustrate pieces of information could have different format, from different source and varying in quality. (b) shows the integration of all these pieces of information should construct a compatible format with compatible semantic. However the reality is some points of these pieces are not always compatible with another as shown in (c).

2. XML, GML and RDF Technology

Extensible Markup Language (XML) is a general purpose markup language that allows its user to define their own tags. Geography Markup Language (GML) is the XML language for geography developed by the Open GIS consortium. Whereas the Resource Description Framework (RDF) is a framework designed as a metadata model.

RDF schema can be used to express typing information. RDF based approach to geography allows free composition between other RDF based languages. Geographic statements can be mixed with statements about weather, physics, business processes, weblogs and syndication, genealogy, politics, and so on, without the need for prior coordination between the designers of languages for these domains. Compared to basic XML, RDF is simple. Unlike the order of RDF properties, order of elements in XML does matter. XML could provide all needed structure for metadata.

GML on the other hand is not directly compos able with other XML languages. It is not possible to inject information about geographic features from another application area

(geology, crime statistics) into the innards of a GML file, and expect any of the tools to keep working.

3. Database Schema Integration Concept: Similarity and Differences

Figure 3 below explains that the ultimate objective of database schema integration is to create one common format of database which allows different users to relocate and use the required geospatial data.

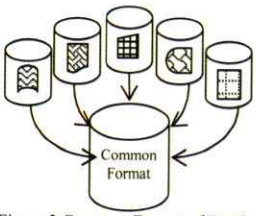

Figure 3 Common Format of Database.

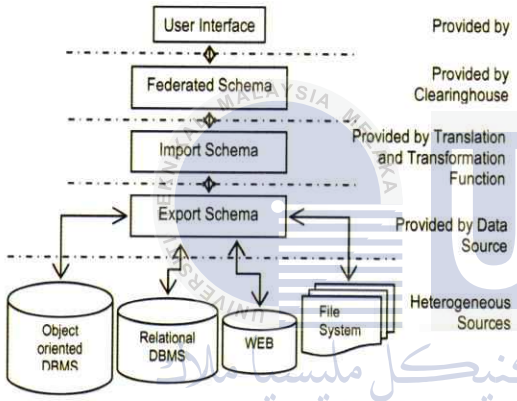

Figure 4 Architecture of Integrated Database Schema.

In the transformation and translation of source data involves not only earth-referenced spatial data between source data and targeted data in different computer systems, but includes the spatial data attribute, geo-referencing, data quality report, data dictionary, and other supporting metadata. Figure 4 above shows architecture for integrated database schema.

It is clear that the key points for a semantic search refinement process depend on the availability of domain ontology and the ability to understand semantic relationships between ontology concepts as explained in Figure 5.

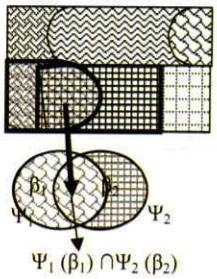

Figure 5 Basic Rules for Merge of Ontology.

Integration between two or more databases requires one global definition to represent two different classes within two different databases schema but represent the same concept. This is possible since semantic model allows to present data in a very abstract and understandable manner. It has been currently used in designing the conceptual structure of database. When one source of data could be direct transform and translate to desire targeted data, this could eliminate duplication at the same time avoid problem of multiple updates, and minimize inconsistencies across applications.

Therefore when two classes in two databases schema definition are referring to the same concept, then one global class definition must be created to represent two classes in the component schemas. For an example in Figure 6 is generalized water body super class.

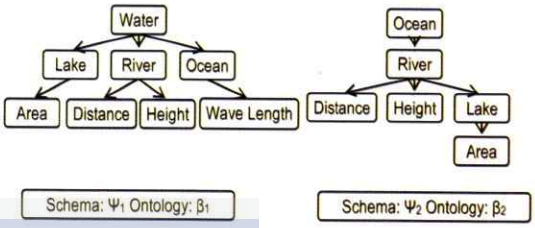

Figure 6 Different Ontology Describing one Entity.

Figure 7 shows the global class definition of water body inherits two local specialized class definitions river and lake with their associated attributes namely distance, height and area respectively.

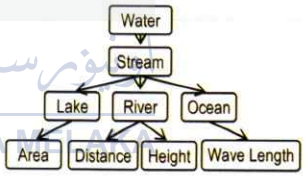

Figure 7 Merging by Finding Equal Concept.

Semantic definition here is mapping between an object modeled, represented and/or stored in an information system and a real world object(s) it represents. This mapping represents the semantic of the object being modeled by describing or identifying the meaning and the user perspectives. Generally ontology concerns about what kind of things exist – what entity (real things) they are in universe; meanwhile in information technology, ontology can be understood as description of the working model of entities and interaction in some particular domain of knowledge or practices.

As discussed in three main methods could be applied to develop the ontology, and the component of the ontology integration system consists of global ontology, local ontology, and the mapping between local and global ontology. Ontology with type of multi-value attributes may connected by binary, symmetric, many to-many roles while attribute and roles can be inherited through inheritance (is-a) links between classes. The semantic mapping could be broken into three phase namely (1) Identifying the concept (2) Brainstorming (3) Categorization.

An example as in Figure 8, we identify river which is a part of water system as a concept to be semantically map. The next phase is an attempt to explain how we could integrate new information with our existing framework of knowledge.

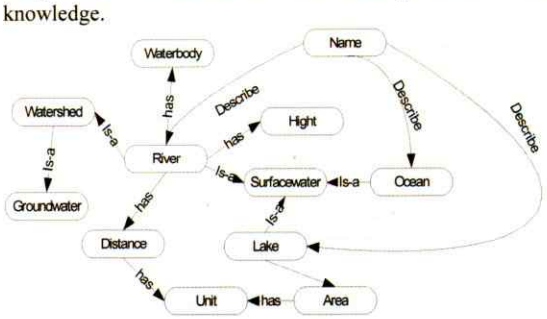

Figure 8 Common Ontology for Water Body.

Ontology allow user to convey queries in their own terms according to their own conceptualization without having to know the underlying modeling and representation of data in heterogeneous databases. Concept used by the user in a query can be then compared in order to search not only for what the user has explicitly requested but also for semantically similar terms. These concepts are compared at the ontological level where there is a more complete description of the semantics of terms. Saying that two entities are similar means nothing, since similarity cannot express categorization unless we understand how the similarity is processed with respect to what property or properties they are similar. Using set theory, similarity S, is measured in term of a matching process; this measurement produces a similarity value that is the result of common as well as different characteristic of class.

4. XML Technology Used

As presented in Figure 9, the XML technology offers significant advantages in the data exchange between interoperable systems due to its flexibility and richness in data representation. Translation and transformation enable source data to be converted to target data as desire by the requester with correct semantic meaning. Since GIS spatial data are stored in hierarchy database, Object relational mapping among database is more suitable. This could model XML document as a tree of objects that are specific to the data in the document.

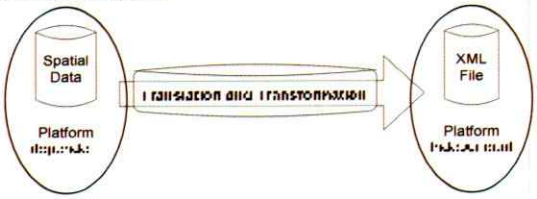

Figure 9 Spatial Data Transformation and Translation to XML File.

Section bellow provides overview presentation of XML schema, Object Oriented Database (OOD) schema and Relational Database Management System (RDBMS) schema. Figure 10 - Figure 11 below and Figure 12 below shows the schema for object defined in Object Oriented Database and Tables based on merging ontology as in Figure 7 above.

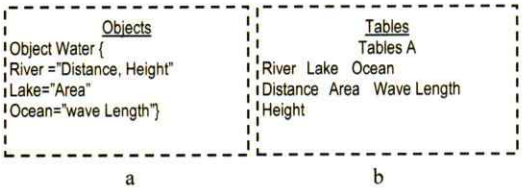

Figure 10 Schemas for Merging Ontology (a) OOD Schema (b) Table Schema.

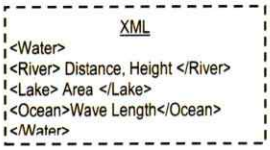

Figure 11 Schema of XML for Merging Ontology.

OOD and Table are able mapped to XML document. Correspondingly there is apparent mapping between Document Type Data (DTD), Classes and Table Schema as show below.

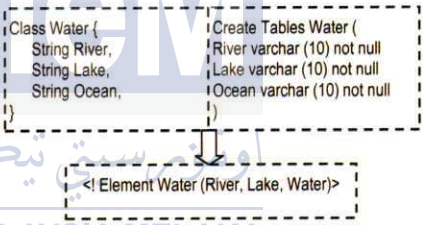

Figure 12 Mapping between DTD, Classes and Table Schema.

5. Conclusions

We present here database schema integration to realize interoperable GIS application with capability to provide a uniform access to multiple heterogeneous information sources. Thus database schema integration is the major activity to accomplish simplifying relocates geospatial data regardless of platform and format. The translation and transformation with XML technology makes it possible for cross platform sharing of information as known GIS software has their own kind of database to hold spatial data, thus created in different format and schema of database. Accordingly semantic heterogeneous are on the topics of database schema integration concern

Acknowledgement

This project is supported initially by a research short grant from UTeM (PJP/2005/FTMK(1)) later co-financed by Science Fund Research Project (01-01-14 SF 0004/SF 001), MOSTI.

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The Development of Multimedia Ubiquitous m-Learning System

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ABSTRACT

This paper reports a usability study done for three m-learning applications developed to assist children in learning Science, Mathematics, and Malay Idioms. Three different approaches were used in designing the applications: 1) game-based learning, 2) storytelling, and 3) cartoon & humour-like approaches. To ensure the end products are usable applications, usability aspects are carefully embedded during the analysis, design and development of the products. In this paper, the steps to fulfill the usability aspects are described and results of the study are presented.

1. Introduction

The International Organisation for Standardisation (ISO) ISO 9241-11 defined usability as 'the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.' This means, a product that passed a usability test is usable, has achieved its development goals, is effective, is efficient and can satisfy users. In order for a product to be accepted as usable products, the usability principles have to be embedded at every phases from analysis, design and development. Lee and Grice stressed that 'usability is not a surface gloss which applied at the last minutes or before the releases of the system or product; but it is deeply affected by every stage of the analysis, design, and development. Furthermore, Nielsen outlines that usable systems are easy to learn (learnability), efficient to use (efficiency), easy to remember (memorability), not error-prone (errors), and satisfactory in use (subjective satisfaction).

2. The m-Learning Applications

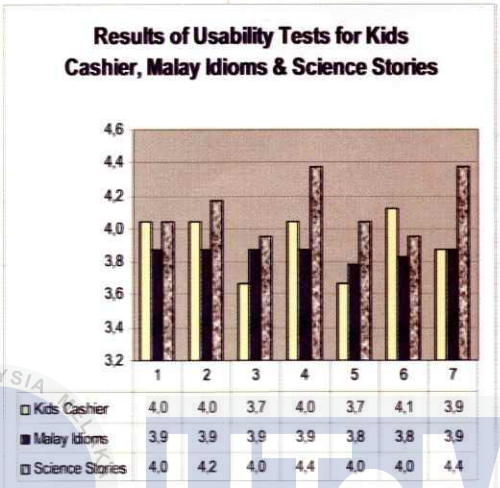
The project has developed three mobile multimedia learning applications entitled Kids Cashier , "Mari Mengenal Haiwan Bersama Mimi" (Mobile Science Stories), and "Simpulan Bahasa" (Mobile Malay Idioms).

Kids Cashier is a mobile educational game for learning basic Mathematics operations in Money Topics. "Mari Mengenal Haiwan Bersama Mimi" is a mobile multimedia application that applies storytelling techniques for teaching Science facts about ants, frogs, butterflies, and fish. While, "Simpulan Bahasa" contains a collection of Malay Idioms for Primary Schools that applies cartoon & humour-like approaches.

3. Results & Analysis

The usability survey for the three mobile learning applications were conducted to 24 students whom attended at our booth during a UTeM Research & Innovation Exhibition 2008 (UTeMEX 2008) at Melaka International Trade Center (MITC), Ayer Keroh, Melaka. The participants whom are students and parents were asked to fill-in a one-page questionnaire form, consisting of 7 questions, after they have tried using each of the application.

Table 1 shows the results of the usability tests.



The survey results show that participants agree that the application:

- assists them/their children in learning the subject (scores (3.9 to 4.0) out of 5),
- is useful for learning the subject (scores (3.9 to 4.2) out of 5),
- facilitates them/their children in learning the subject (scores (3.7 to 4.0) out of 5), and
- is an interesting learning tool to use (scores (3.9 to 4.4) out of 5).

The results also indicate that participants:

- would like to use the application again (scores (3.8 to 4.1) out of 5), and
- would like to own the application in their/parent's mobile phones (scores (3.9 to 4.4) out of 5).

5. Conclusion

This paper reports the application of usability design principles on three mobile learning applications that applies three different mobile to human interaction approaches: game-based learning, storytelling, and cartoon & humour-like approach. It also reports the results of usability tests conducted for all the samples mobile learning applications. As a conclusion, the application of usability design principles in the product development stages will assist developers to produce a usable product.

Acknowledgements

This study is part of a m-learning project [13][14] at UTeM entitled "The development of a multimedia ubiquitous m-learning system" (project no.: 01-01-14-SF0008) funded by the Ministry of Science, Technology and Innovation (MOSTI).

A Novel Natural Approach To Euclidean TSP Engine For Manufacturing Application

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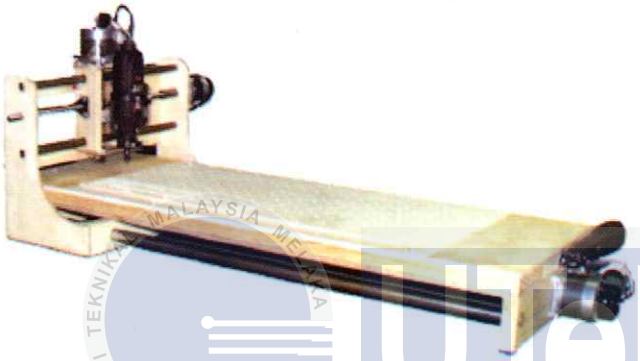


Introduction

Computerized Numerical Control (CNC) machine is playing important role in manufacturing in the last several decades. There are many kind of this machine, hand made to high end machine. CNC machine usually used for drilling, milling and also engrave various material such as metal, wood, plastics and other material.

There are two kind CNC machine available in the market such as automatic by computer based controlled and semi automatic machine. Computer based controlled machine usually provide software to create work order for CNC machine and also provide interface to CAD software. Disadvantage of these machines is not applied optimum tour method for drilling/milling mostly. Optimum tour may use Traveling Salesman Problem.

Recently research regarding development natural approach to Euclidean TSP is in progress to produce fast algorithm. This approach will result near optimal solution compare to best known solution and the approach shall readable. Preliminary result of this project has done and the result is promising to apply because error average less than 10% compare to best known solution.

Application of TSP to CNC problem will increase optimality machine usage and certainly will result more high efficiency. Mostly CNC machine use brute force method to drill PCB. This is our motivation to build CNC machine for drill PCB and controlled by a computerized using TSP method.

Objective

The objective of this project mainly is to build a CNC machine as an implementation of novel natural approach to Euclidean TSP. The others objective are:

1. Expand our knowledge in industrial manufacturing application
2. Develop cooperation with other faculty to share and develop interdisciplinary project.
3. Produce a machine that will have some potential to market.

Traveling Salesman Problem

The main idea behind this project is to build the 'brain' of the CNC machine. The project is dealing with TSP machine. The Traveling Salesman Problem(TSP) naturally arises as a subproblem in many transportation and logistics applications. The TSP has caught much attention of mathematicians and computer scientists specifically because it is easy to describe but difficult to solve. Traditionally, a traveling salesman wants to visit all cities without repeating any in the least amount of time/distance. The vertices are the cities he must visit each city once while the edges are roads connecting the cities. Weights on the edges indicate the time or distance to travel between cities.

The symmetric traveling salesman problem, is this case, the traveling costs are presumably symmetric in the sense that traveling from city A to city B costs just as much as traveling from B to A. This problem is a special case with $m_0 = \frac{n(n-1)}{2}$ edges.

Most algorithms for the TSP so far have shown an exponential growth in run time asthe number of nodes n on the tour increases. The challenge here is to come out with a standard algorithm that will always produce near optimal tour within limited computational processing.

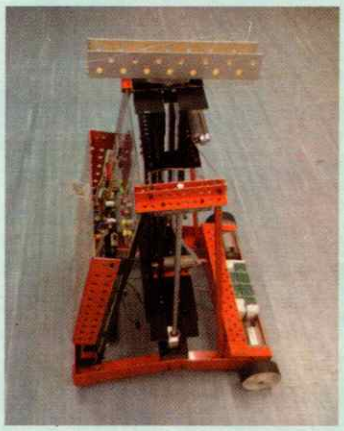
Performance

The primary objective of this study is to come up with fast near optimal solution using novel friendly techniques. This is an achievable target and practical solution to the fast changing electronic industry. Although transportation applications are the most natural setting for the TSP, a more classic industrial example is the scheduling of a machine to drill holes in a production of printed electronic circuit board. The current research groups are mostly producing their best algorithm with the running time near $O(n^2)$.
The secondary theoretical objective is to capture the optimal tour in polynomial time. The ultimate issue here is whether the series of filters being used is capable of reducing the exponential number of possible tours into polynomial number of solutions. The average running time is expected to be at most near $O(n^3)$.

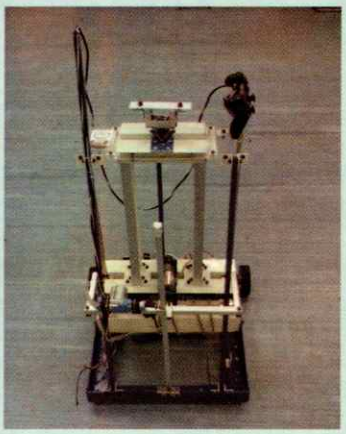
The strategy is to reduce the total exponential number of routes in ETSP into a polynomial number of routes by a series of friendly natural filters. First strategy is to filter out all those routes with edge crossing. A good tour for a geometric ETSP instance will not cross itself, since otherwise there shall be the shorter tour by removing the crossing edges and reconnecting the tour segments. Second filter is localization. The idea of localization is coming from the physical phenomenon of Brownian Motion as shown in Figure above. Particles in the world naturally form clusters. The cities in the world are not uniform by nature. The people form clusters and tend to live closer to one another.

The difficulty of the Euclidean TSP lies mostly in combining the clusters to form global solution to the TSP. An efficient technique is needed here considering the number of possible paths within a cluster for a pair of nodes and also not to mention the number of possible paths between clusters.

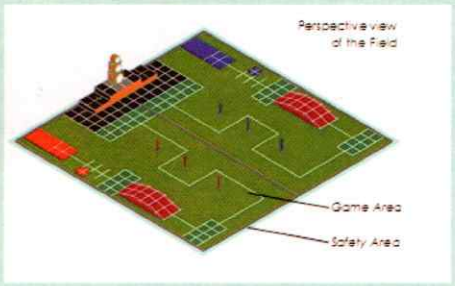
TRAVELLER ROBOT



AUTOMATIC ROBOT



MANUAL ROBOT



ROBOCON 2009

TRAVEL TOGETHER WITH THE VICTORY DRUM

The annual National ROBOCON '09 was organized by the Kementerian Pengajian Tinggi (KPT), SIRIM , RTM and the Asian Broadcasting Union(ABU) held at the Stadium Melawati, Shah Alam, Selangor on the 7 -10 May 2009.

The theme of the competition is Travel Together for the Victory Drum. The concept of the game is based on a historical Japanese transportation which carry passenger using the Kago Palanquin going through the Japanese hill and jungle to its destination. Hence the robot consists of an automated, a manual and a traveler robot to accomplish the task.

The purpose of competing Robocon 2009 is to help student to be positive and confident with the robot that they design and build functioned normally, exposure that the robot designs varies for the same activities and in-depth knowledge of robotics.

A total of 64 teams from the institution of higher learning in Malaysia took part in this competition including 3 teams from UTeM - 1 team from the Faculty of Manufacturing Engineering and 2 teams from the Faculty of Electrical Engineering. Each team competes with 3 other teams in a group.

The Vice Chancellor was at the competition since the 8th till closing ceremony on the 10th May to give his undivided moral support to the UTeM's teams. The Deputy Vice Chancellor (Research and Innovation) also visited the team to give his last word of advice and support prior to the competition. Prof. Dr. Mohamad Kadim Suaidi, the Director of the Centre of Research Management and Innovation was also at the competition to oversee welfare of the teams and supporters.