



AU ABSTRACTS - 2011

**ASSUMPTION UNIVERSITY
BANGKOK, THAILAND
JULY 2011**

ACADEMIC PROGRAMS OF ASSUMPTION UNIVERSITY

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- Architecture
- Interior Architecture

Faculty of Arts (Degree: Bachelor of Arts – BA)

- Business English
- Business French
- Business Chinese
- Business Japanese
- Music Business
- Contemporary Music Performance
- Professional Music
- Contemporary Music Writing and Production

Faculty of Biotechnology (Degree: Bachelor of Science – BS)

- Food Technology
- Agro-Industry

Faculty of Communication Arts (Degree: Bachelor of Arts – BA)

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- Visual Communication Arts

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- Computer and Network Engineering
- Telecommunications and Electronics Engineering

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- Finance and Banking
- Accounting
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- Integrated Marketing Communications
- Hospitality and Tourism Management
- International Business Management
- Property Valuation Management

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- Business Economics

Faculty of Nursing Science (Degree: Bachelor of Nursing Science – BNS)

- Nursing Science

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- Life Assurance
- Industrial Management
- Real Estate

Faculty of Science and Technology (Degree: Bachelor of Science – BS)

- Computer Science
- Information Technology
- Telecommunication Science
- Applied Statistics
- Technology Management

(Continued on inside back cover)

Abstracts of Scientific Papers

Presented by the Staff of

Assumption University

at

International Scientific Meetings

From July 2010 to June 2011

Prepared and published by

Office of the AU Journal of Technology

Assumption University

Bangkok, Thailand

July 2011

About this publication:

Title: AU ABSTRACTS – 2011

Extended Title: Abstracts of Scientific Papers Presented by the Staff of Assumption University at International Scientific Meetings from July 2010 to June 2011

Prepared by: Narong Chomchalow, Editor, AU Journal of Technology, Office of the President, Assumption University

Editor: Narong Chomchalow, Ph.D.

Publisher: Assumption University, Bangkok, Thailand

Date Published: July 2011

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Preface

Being an institute of higher learning, and the first international university in Thailand, Assumption University has a definite policy to provide quality instruction to the students, both undergraduates and graduates, and both Thai and foreign nationals. An equally important function of the University is to conduct research in all fields.

Assumption University is one of the leading universities in the field of science and technology. During the past year, many faculty members and students participated in various international meetings held in Thailand and abroad; many have also presented their papers at these meetings. The Management of Assumption University is proud of their performance and achievements.

To display and maintain a record of their endeavors and achievements, and to encourage other faculty members and students to make similar contributions, the abstracts of scientific papers presented at the international scientific meetings during this one-year period from July 2010 to June 2011, have been compiled and published for distribution to interested individuals and institutions. The present publication is the thirteenth issue of the series of the AU Abstracts, published annually. The first one, 'AU Abstracts - 1999' was published in September 1999, covering the presentation period from May 1998 to June 1999. Subsequent publications of the series were published in July covering a period from July of the previous year to June of the next year.

Originally, the Office of the AU Journal of Technology, who initiated this publication, was charged with the responsibility to cover the activities of five 'technology-based' faculties and schools, namely: School of Architecture and Design, Faculty of Biotechnology, Faculty of Engineering, Faculty of Nursing Science, and Faculty of Science and Technology. Abstracts from the Graduate School of Psychology are also included whenever aspects of technology are studied. As the Office of the President also presented 'technology-related' papers, they are included in this publication as well.

It is hoped that this small publication would be of some benefit to our readers and that it will serve a dual purpose, relaying information, as well as an encouragement to all the faculty members and students of the 'technology-based' faculties and schools. It is our desire to continue to present this particular series and publication every year.

On behalf of Assumption University, I wish to express my sincere thanks to Dr. Narong Chomchalow, Editor of the AU Journal of Technology, for his initiative, as well as hard work in compiling, overseeing, and preparing the manuscripts of the AU Abstracts - 2011. The assistance provided by Dr. Sompit Porsutyaruk, Vice President for Academic Affairs, and the staff members of her office to systematically collect all known abstracts from international events is gratefully appreciated.



Rev. Bro. Dr. Bancha Saenghiran, FSG
President, Assumption University

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Faculty of Biotechnology

Faculty of Biotechnology

BIT's 3rd World Congress of Industrial Biotechnology 2010 (ibio-2010) Dalian, China, 25-27 July 2010

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2. *Chrysanthemum indicum*, *Centella asiatica* and *Andrographis paniculata*
Antibacterial Activity on *Bacillus cereus* and *Listeria monocytogenes* under Normal
and Lowing pH Stress Condition
Christina Vania Utami, Nateepat Pitinidhipat, and Patchanee Yasurin 4

Institute of Food Technologists (IFT) Annual Meeting and Food Expo (IFT'11) New Orleans Morial Convention Center, New Orleans, LA, USA, 11-14 June 2011

3. The Study of Antibacterial Effect in *Chrysanthemum indicum*, *Centella asiatica*, and
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Pathogenic Bacteria) under Normal and Osmotic Stress
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The Comparison of Rice Bran Oil and Palm Acid Oil Used for Biodiesel Production

Churdchai Cheowtirakul

Faculty of Biotechnology

Biodiesel production has received considerable attention in the recent past as a biodegradable and nonpolluting fuel. The cost of biodiesel, however, is the major hurdle to its commercialization in comparison to petroleum-based diesel fuel. The high cost is primarily due to the raw material, mostly neat vegetable oil. The production of biodiesel by transesterification process employing alkali catalyst has been industrially accepted for its high conversion and reaction rates. In this work, the possible method of biodiesel fuel production from rice bran oil (RBO) and palm acid oil (PAO) by using acid esterification and base transesterification reactions were studied and compared. The esterification conditions of the experiment were carried out by varying the quantities of 98% methanol with 3, 4, 5, 6, 7 and 8 times of oil by weight and also added with conc.H₂SO₄ at 1.0, 1.5, and 2.0% of oil by weight. The transesterification conditions of experiment were carried out by varying the quantities of 98% methanol with 3, 4, 5, and six times of oil by weight, and added with 98% NaOH at 0.5, 0.8, 1.0 and 1.5% of oil by weight. Both the RBO and PAO obtained the optimum reaction at seven times of methanol to oil weight, 1.5% of conc.H₂SO₄ to oil weight. Times for optimum reaction have also been studied. The optimum reaction time for acid esterification reaction was four hours with stirring and heating at 60°C. The starting acid value of RBO oil and PAO were at 21.28 and 219.8 mgKOH/g. After esterification the acid values were 3.85 and 3.25 mgKOH/g, correspondingly. In base transesterification, both the RBO and PAO obtained the optimum conditions at four times of methanol to oil by weight, and 0.5% of 98% NaOH to oil by weight, optimum reaction was reached at 4 hours, stirring and heating at 60°C. The starting weights for RBO and PAO were at 350 g. After the reactions, the amounts of biodiesel obtained were 226.07 and 293.69 g, correspondingly.

Keywords: Esterification, transesterification, vegetable oil, biodegradable, nonpolluting, methanol.

Presented at: BIT's 3rd World Congress of Industrial Biotechnology 2010 (ibio-2010), Dalian, China, 25-27 July 2010.

Published in: Proc. ibio-2010, p.102.

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***Chrysanthemum indicum*, *Centella asiatica* and *Andrographis paniculata* Antibacterial Activity on *Bacillus cereus* and *Listeria monocytogenes* under Normal and Lowing pH Stress Condition**

Christina Vania Utami*, Nateepat Pitinidhipat, and Patchanee Yasurin

Faculty of Biotechnology

Bacillus cereus and *Listeria monocytogenes* are foodborne pathogenic bacteria. They are often found in contaminated food, especially raw food, milk, and milk products. Classic food preservation methods like salting, cooling, pickling do not guarantee to inhibit their growth, whereas, very extreme conditions of food preservation can cause the reduction of food quality. The alternative way to inhibit their growth without changing the food quality is the application of natural antibacterial compounds. Three Southeast Asia herbs, *Chrysanthemum indicum*, *Centella asiatica*, and *Andrographis paniculata* were used in this experiment because they showed promising active antibacterial compounds under osmotic stress [1], and are edible, cheap and easy to find. Their antibacterial 95% ethanolic extracts are tested on *B. cereus* and *L. monocytogenes* under neutral and acidic condition; pH 7, pH 6.5, pH 6, pH 5.5 by agar disc diffusion method. The results showed that the lower pH stress condition gave the better antibacterial effect on both bacteria in all three herbs. Acids might alter the cell membrane which increases the non-specific antibacterial binding site. However, this hypothesis needs to be further investigated. The result of in vitro antibacterial screening showed that *C. indicum* crude 95% ethanolic extracts under pH 7.0, 6.5, 6.0, and 5.5 gave 7.62 ± 1.18 mm, 7.87 ± 2.35 mm, 6.25 ± 3.06 mm, and 9.50 ± 2.14 mm, respectively, on *L. monocytogenes*. While under same conditions, *C. asiatica* crude 95% ethanolic extracts gave 8.75 ± 1.03 mm, 8.75 ± 2.66 mm, 7.75 ± 2.37 mm, and 9.12 ± 1.96 mm, respectively, and *A. paniculata* 95% ethanolic extracts gave 9.75 ± 1.75 mm, 5.87 ± 3.52 mm, 8.5 ± 1.23 mm, and 9.33 ± 1.63 mm, respectively. Meanwhile, *C. indicum* crude 95% ethanolic extracts under pH 7.0, 6.5, 6.0, and 5.5 gave 2.12 ± 0.64 mm, 1.37 ± 0.92 mm, 0.93 ± 0.78 mm, and 6.00 ± 3.25 mm, respectively, on *B. cereus*. While under same conditions, *C. asiatica* crude 95% ethanolic extracts gave 0.62 ± 0.44 mm, 2.25 ± 0.46 mm, 1.75 ± 0.28 mm, and 6.50 ± 1.60 mm, respectively, and *A. paniculata* 95% ethanolic extracts gave 0.87 ± 0.79 mm, 1.25 ± 0.60 mm, 2.00 ± 1.65 mm, and 6.00 ± 1.31 mm, respectively. The clear zone of all herb crude 95% ethanolic extracts showed more inhibition effect on *L. monocytogenes* than *B. cereus*. However, the promising active antibacterial compounds in all three herbs need to be further identified.

Keywords: Antibacterial compounds, herbs, low pH stress, ethanolic extracts.

Presented at: The First International Conference on Interdisciplinary Research and Development; Theme: Interdisciplinary Approach to Research and Development; IMPACT Exhibition Center, Mueang Thong Thani, Bangkok Metro, Thailand, 31 May - 1 June 2011.

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Published in: Proc.1st Int. Conf. Interdisciplinary Research and Development; Special Issue of Int. J. Computer, Internet and Management 19(SP1): 57.1-57.6.

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The Study of Antibacterial Effect in *Chrysanthemum indicum*, *Centella asiatica*, and *Andrographis paniculata* on *Bacillus cereus* and *Listeria monocytogenes* (Foodborne Pathogenic Bacteria) under Normal and Osmotic Stress

Nateepat Pitinidhipat and Patchanee Yasurin

Faculty of Biotechnology

Bacillus cereus and *Listeria monocytogenes* have an extraordinary ability to survive, grow, and proliferate in high osmotic stress, a classic food preservation method; using natural herb antibiotic might be an alternative way to solve this problem. Three local herbs; *Chrysanthemum indicum* (chrysanthemum), *Centella asiatica* (pennywort) and *Andrographis paniculata* (creat), are chosen to study their antibacterial activity on *B. cereus* and *L. monocytogenes* 10403S under normal and osmotic stress (5% NaCl) condition by agar disc diffusion method. Among five different extraction conditions, the 95% ethanol extraction condition gave the highest antibacterial activity in all three crude extracts on both *B. cereus* and *L. monocytogenes* 10403S. The result of in vitro antibacterial screening showed that *A. paniculata* crude 95% ethanolic extract gave the highest antibacterial activity, 3.33 ± 0.47 mm, on *B. cereus* under normal condition, while *C. asiatica* and *C. indicum* crude 95% ethanolic extract gave 1.67 ± 0.94 mm, and 1.17 ± 0.85 mm, respectively, on *B. cereus* under the same condition. Only *C. asiatica* and *A. paniculata* crude 95% ethanolic extract showed antibacterial activity on *L. monocytogenes* 10403S under normal condition; 1.67 ± 0.24 mm, and 1.83 ± 0.24 mm, respectively. Under osmotic stress, the antibacterial activity of crude 95% ethanolic extract was increased twofold on both *B. cereus* and *L. monocytogenes* 10403S. Salt might alter the cell membrane which increases non-specific antibacterial binding site. However this hypothesis needs to be further investigated. The minimum inhibitory concentrations (MICs) of *A. paniculata*, *C. asiatica* and *C. indicum*, using broth dilution method, showed 4 μ l/ml, 16 μ l/ml, and 16 μ l /ml, respectively, against *B. cereus*. The MICs of *A. paniculata* and *C. asiatica* showed 16 μ l /ml and 8 μ l /ml, respectively, against *L. monocytogenes* 10403S. The minimum bactericidal concentrations (MCBs), using broth dilution method, of *A. paniculata*, *C. asiatica* and *C. indicum* showed 4mg/ml, 16 μ l/ml, and >32 μ l /ml, respectively, against *B. cereus*. The MCBs of *A. paniculata* and *C. asiatica* showed 16 μ l /ml, and >32 μ l /ml, respectively, against *L. monocytogenes* 10403S.

Keywords: Agar disc diffusion method, ethanolic extract, crude extracts, non-specific antibacterial binding site, inhibitory concentrations, broth dilution method, minimum bactericidal concentrations.

Presented at: Institute of Food Technologists (IFT) Annual Meeting and Food Expo (IFT'11), Track - Food Microbiology, New Orleans Morial Convention Center, New Orleans, LA, USA, 11-14 June 2011.

Published in: Book of Abstracts of IFT'11.

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Faculty of Engineering

Faculty of Engineering

The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010)

Meiji University, Tokyo, Japan, 26-29 October 2010

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3. On BPC Permutations Admissibility to Variable-Stage Hybrid Optical Shuffle-Exchange Networks
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4. A Recursive Resolution-Enhancement Using Multiframe SRR Based on Meridian Filter with Meridian-Tikhonov Regularization
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A Leclerc Bayesian Approach for Video Reconstruction Based on a Robust Iterative SRR and a General Observation Model

Vorapoj Patanavijit

Department of Computer and Network Engineering, Faculty of Engineering

Traditional Super-Resolution Reconstruction (SRR) vigorously falls back on the availability of accurate registration for this fusion task and the observation noise model. When the motion is registered inaccurately, as often happens for non-global motion fields, annoying artifacts appear in the super-resolved outcome and when the observation noise is not AWGN, severe artifacts appear in the reconstructed result. This paper proposes the alternative robust SRR algorithm that can be successively applied on the real or standard sequence and can be applied on the sequences that are corrupted by various noise models. First, the proposed SRR algorithm is based on Bayesian framework with the Leclerc norm for measuring the error between the projected estimate of the high quality reconstructed image and each corrupted image and for removing outliers in the data. Second, the proposed algorithm is used as a General Observation Model or GOM (or fast affine block-based transform) in order to cope with real complex motion or non-isometric inter-frame motion sequences. The experimental results demonstrate that the proposed algorithm can be well applied on real sequences such as Suzie and Foreman sequences for several noise models (such as AWGN, Poisson, Salt & Pepper noise and Speckle) and several noise powers.

Keywords: Super-Resolution Reconstruction, noise model, non-global motion fields, annoying artifacts, non-isometric inter-frame motion sequences.

Presented at: The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010), Meiji University, Tokyo, Japan, 26-29 October 2010.

Published in: Proc. ISCIT 2010, pp. 856 - 861.

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High Frequency Preserving Fast Compressive Sensing Based on Wavelet Block Orthogonal Matching Pursuit

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Department of Computer and Network Engineering, Faculty of Engineering

Due to large data sets, block processing is usually applied for fast compressive sensing (CS) reconstruction; however, it gives the undesired blocking artifacts in reconstructed data. In order to reduce blocking artifacts and preserve high frequency, this paper proposes a novel block processing in wavelet domain instead of spatial domain. No post-processing or special mapping is included. CS is applied only on blocks where the data are really sparse. An enhancing process, often included for artifact reduction, is no longer necessary. Our algorithm was evaluated by reconstructing three standard images (Lena, Mandrill and Peppers) and then compared with scrambled block Hadamard ensemble (SBHE) and block-based CS sampling with a smoothed PL variant using directional discrete wavelet transform (BCS-SPL-DDWT). In the experiment, it provided better reconstruction, both objectively (PSNR) and subjectively, at low measurement rate. It gave the sharpest image in all cases. Details were preserved and blocking artifacts were not detectable.

Keywords: Block processing, blocking artifacts, artifact reduction, scrambled block Hadamard ensemble, block-based CS sampling.

Presented at: The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010), Meiji University, Tokyo, Japan, 26-29 October 2010.

Published in: Proc. ISCIT 2010, pp. 1,164-1,169.

Full paper requisition: <pasparch@yahoo.com; asupatana@yahoo.com; patanavijit@yahoo.com>

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On BPC Permutations Admissibility to Variable-Stage Hybrid Optical Shuffle-Exchange Networks

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Department of Computer Engineering, Faculty of Engineering

This paper introduces a simple algorithm for determining the minimum number of stages in a variable-stage hybrid optical multistage shuffle-exchange interconnection network necessary for admissibility of a given bit-permute-complement (BPC) permutation. Here admissibility means that a permutation can be realized without conflicts for one pass through the network. It is suggested that in $N \times N$ ($N = 2^n$) shuffle-exchange network (SEN) optical signals are switched, but the switches (directional couplers) are controlled electronically. Depending on the kind of a permutation, the number of stages m can be varied from 1 to $2n-1$. For solving this problem, Das, Bhattacharya, and Bezrukov developed an algorithm with $O(n^2)$ time complexity. In this paper, we offer an approach which makes possible to do the same in $O(n)$ time only. In an optical SEN, minimizing the number of stages for realizing a given BPC permutation helps to reduce path-dependent loss on average, moreover, as we have shown, it alleviates also solving the crosstalk problem.

Keywords: Interconnection networks, algorithms, optical networks, BPC permutations.

Presented at: The 10th IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN 2011), Innsbruck, Austria, 15-17 February 2011.

Published in: Proc. IASTED PDCN 2011, Track 719-049, pp. 24-30.

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A Recursive Resolution-Enhancement Using Multiframe SRR Based on Meridian Filter with Meridian-Tikhonov Regularization

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The real noise model corrupting the observed images is unknown and usually random statistical model. Consequently, classical SRR (Super Resolution Reconstruction) algorithms using median (L1) and mean (L2) filtering structures may degrade the reconstructed image sequence rather than enhance it. The mathematical analysis [1] demonstrates that the meridian filtering structure exhibits more robust characteristic than that of median (L1) and mean (L2) filtering structures. For applying it on images that are corrupted by any noise models at several noise powers, a recursive resolution-enhancement using a multi-frame SRR is proposed. The stochastic framework (using maximum a posteriori or maximum likelihood estimator) has been applied to the proposed SRR algorithm. The Meridian filter is used for removing outliers in the data and for measuring the difference between the projected estimation of the HR image and each LR image. Due to the ill-posed condition, Tikhonov and Meridian-Tikhonov regularization are compulsively incorporated to remove artifacts from the final answer and improve the rate of convergence. In the experimental section, numerical experiments are carried out on synthetic data by using the proposed SRR algorithm. Both the peak signal-to-noise ratio (PSNR) and virtual images are used to measure the quality of an image. The performance of the proposed methods compared with other SRR algorithms based on L1 and L2 norm is demonstrated for several noise models (such as Noiseless, AWGN, Poisson Noise, Salt&Pepper Noise and Speckle Noise) and different noise powers.

Keywords: Image reconstruction, digital image processing, SRR (Super Resolution Reconstruction).

Presented at: The 8th IEEE Annual International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON 2011), Khon Kaen, Thailand, 17-19 May 2011.

Published in: Proc. ECTI-CON 2011, pp. 1,047-1,050.

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Faculty of Nursing Science

Faculty of Nursing Science

**The 1st International Conference on Qualitative Research in Nursing and Health:
“Situating and Stipulating Qualitative Health Research in Today’s Practices”
Wiang Inn Hotel, Chiang Rai, Thailand, 1-3 December 2010**

1. Use of Health Line Consultations among Myanmar Migrants, Thailand: A Descriptive Study
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Use of Health Line Consultations among Myanmar Migrants, Thailand: A Descriptive Study

Khaing Khaing Gyi, Win Sint Sint Aung, and Paulina Mu Pauline

Faculty of Nursing Science

This study was conducted to examine uses of health line consultations among Myanmar migrants in Thailand. Data were collected by phone interviews with semi-structured data compilation forms from 15:00 to 22:00 hours daily during the period from July 2009 to May 2010. Age, sex, address, date and time of call, sources of information, health concern, health advice, and missed calls were recorded. Descriptive statistics and content analysis were applied. It was found that 208 Myanmar migrants would have liked to consult the health line, but only 132 Myanmar migrants were able to use it. Twenty-eight cases consulted it for family planning and reproductive health, ten cases were with musculoskeletal issues, four cases with dental problems, seven cases each for upper respiratory and urinary tract infections, 16 cases with gastrointestinal issues, six cases with skin issues, 19 cases with infectious diseases, four cases with cardiovascular conditions, ten cases with general debility, four cases with surgical conditions, and one case related to an eye problem. It was concluded that effective health line advertisements coinciding with health line consultations should be carried out to increase awareness and usage of said consultations.

Keywords: Family planning, reproductive health, musculoskeletal, urinary tract infections, cardiovascular, general debility.

Presented at: The First International Conference on Qualitative Research in Nursing and Health on the theme "Situating and Stipulating Qualitative Health Research in Today's Practices", Wiang Inn Hotel, Chiang Rai, Thailand, 1-3 December 2010.

Published in: Abstract published in the Book of Abstracts of the First International Conference on Qualitative Research in Nursing and Health.

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The Patterns and Causes of Drinking among Students in a Private University

Siriporn Poonruksa

Faculty of Nursing Science

The purpose of this study was to describe and understand patterns and causes of drinking of university students by using phenomenological qualitative design. Data were collected among 30 participants derived from snow ball technique through an in-depth interview under ethical considerations. Qualitative content analysis, in which articulation and clarification of the meaning and transferability in the “text” was used, was applied and the results revealed that the participants usually drank alcohol 1-4 times/week and the amount of consumption varied from drinking for better physical health to intoxication level. ‘Cocktail Frozen’ was the most popular form for participants’ drinking and the main reason was to re-joy their lives. Places for drinking were usually located at the nearby university and dormitory. There were four causes involving participants’ drinking including gender, psychological problems, parents’ drinking, and peer pressure. It was concluded that the knowledge and understanding about patterns and causes of drinking among the university students will enable health care providers to initiate health promotion programs to quit drinking effectively.

Keywords: Phenomenological qualitative design, snow-ball technique, ethical consideration, ‘Cocktail Frozen’.

Presented at: The First International Conference on Qualitative Research in Nursing and Health on the theme “Situating and Stipulating Qualitative Health Research in Today’s Practices”, Wiang Inn Hotel, Chiang Rai, Thailand, 1-3 December 2010.

Published in: Abstract published in the Book of Abstracts of the First International Conference on Qualitative Research in Nursing and Health; also published in AU Journal of Technology 14(4): 283-289 (April 2011).

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Office of the President

Office of the President

The XLIV Cocotech Meeting on International Conference of New Technical Development for a Sustainable and Competitive Industry
Imperial Boat House Resort & Spa Hotel, Samui Island, Surat Thani, Thailand, 5-9 July 2010

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The 62nd Spring Meeting of the International Association of Horticultural Producers (AIPH)
Suncheon, Korea, 4-6 October 2010

2. Giant Salvinia – An Invasive Alien Aquatic Plant in Thailand
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Santiago, Chile, 14-16 October 2010.

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Health and Economic Benefits of Coconut Oil Production Development in Thailand

Narong Chomchalow*

Office of the AU Journal of Technology, Office of the President

Coconut oil is one of the world's oldest oils, if not the oldest. People from countries where the coconut palms are grown have made use of it to cure all kinds of ailments for thousands of years. Its amazing properties include having: (i) saturated fatty acids (SFAs), whose single bonds prevent oxidation and hydrogenation, their end products - free radicals and trans fats - of which are detrimental to health; (ii) medium chain fatty acids (MCFAs) that are directly converted into energy in the liver; they also increase the metabolic rate resulting in a better conversion of food into energy and thermogenesis that stimulates the breakdown of stored fats into energy, all of which culminate in weight loss; (iii) antimicrobial property of lauric acid (C-12, 48-52%) and other MCFAs that kill pathogenic bacteria, fungi, viruses, protozoa and parasites; and (iv) antioxidants in the form of vitamin E, phenolic compounds and phytosterols that prevent oxidation from occurring; thus no dangerous free radicals are formed. In addition to its numerous beneficial health effects, coconut oil has proven to be effective against heart disease, cancer and diabetes which are considered as emerging new diseases simply because of the adoption of modern lifestyle of the people, e.g., consuming processed foods, changing from saturated to unsaturated oils, having no exercise, staying away from sunlight, having not enough rest and too much stress, etc. Several new viral diseases occur as a result of changing climate, convenient and rapid transportation, and the raising of domesticated livestock which culminate in new strains of the viruses causing HIV/AIDS, SARS, and 2009 pandemic influenza that cannot be treated by the use of chemical drugs and antibiotics because they possess lipid coat that does not allow drugs to penetrate the viral particles, but surrender to the coconut oil, which, being lipid itself, could dissolve and break down their lipid coat, thereby penetrating them.

The author founded CDCOT in August 2007 aiming at providing proper knowledge of virgin coconut oil (VCO) and encouraging people to use it to promote health and beauty. Its activities include the publication of technical bulletins and a quarterly newsletter, giving lectures to public and academic gatherings and sharing information through television and radio broadcasting, news releases, technical seminars, etc. Seventeen technical bulletins (300,000 copies) have already been published. CDCOT members have reached 700 in less than three years and coconut oil is now "talk-of-the town" of people of all walks of life. The number of manufacturers of VCO has increased from three at the beginning to more than 100 at present, and still increases at a rapid rate as the demand of VCO has never been met. Several innovative techniques of VCO extraction have been developed. VCO worth of over 65 million Bath (US\$ 2.2 million) has been exported in 2008. Although this is still a small amount as compared to other export commodities from Thailand, a ten-fold increase is expected in 2009, and much more in 2010.

* Chairman, Conservation and Development of Coconut Oil of Thailand Forum (CDCOT).

Keywords: VCO, SFAs, MCFAs, antimicrobial, antioxidants, heart disease, cancer, diabetes, HIV/AIDS, SARS, 2009 pandemic influenza, modern lifestyle, CDCOT.

Presented at: The XLIV Cocotech Meeting on International Conference of New Technical Development for a Sustainable and Competitive Industry, Imperial Boat House Resort & Spa Hotel, Samui Island, Surat Thani, Thailand, 5-9 July 2010.

Published in: Proc. XLIV Cocotech Meeting, Asian and Pacific Community, Jakarta, Indonesia, pp. 16-23; also published in AU Journal of Technology 14(3): 181-187 (January 2011).

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Giant Salvinia – An Invasive Alien Aquatic Plant in Thailand

Narong Chomchalow*

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Giant salvinia (*Salvinia molesta*) is an introduced floating aquatic fern species native to Brazil. It can reproduce vegetatively and under ideal growing conditions can double its biomass every 3-5 days. Within a few years after its introduction as an aquarium plant in 2001, it created a problem in many waterways in many parts of the Kingdom. It can form mass on the water body, which blocks out the sun's rays from penetrating through, thereby inhibiting photosynthesis of submerged aquatic plants. Water quality is impaired under these masses, especially in areas with restricted water movement. Although the Act banning its introduction and cultivation has been issued since 1978, there is still a problem in controlling its widespread distribution as well as in eradicating it. There are very few herbicides approved for use on giant salvinia, and even fewer demonstrate sufficient efficacy for controlling this plant. Besides, herbicide treatment is expensive. This gives us a good lesson to learn.

Keywords: Plant introduction, noxious aquatic weed, rapid multiplication, impaired water quality, herbicide spray.

Presented at: The 62nd Spring Meeting of AIPH, Suncheon, Korea, 4-6 October 2010.

Published in: AU Journal of Technology 15(1): (July 2011) (in press)

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Vetiver Research, Development and Application in Thailand

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Vetiver R&D works recently conducted in Thailand will be briefly described, viz.

- (i) improvement of forest ecosystem,
- (ii) carbon sequestration,
- (iii) stabilization of highway slopes,
- (iv) characterization of native vetiver ecotypes,
- (v) selection of native vetiver ecotypes for forest area, and
- (vi) phytoremediation by various methods.

In addition, vetiver applications will also be described, viz.

- (1) rehabilitation of deteriorated environment,
- (2) soil conservation in sloping agricultural areas,
- (3) contests on vetiver planting, vetiver-planting promotion, and vetiver handicraft design,
- (4) setup of vetiver's fanatics networks,
- (5) establishment of vetiver banks, and
- (6) architectural utilization of vetiver board.

Keywords: Forest ecosystem, characterization, ecotype, carbon sequestration, rehabilitation, vetiver bank, vetiver board, vetiver handicraft.

Presented at: The First Latin America Vetiver Conference, Santiago, Chile, 14-16 October 2010.

Published in: Proc. First Latin America Vetiver Conference (in CD ROM); also published in AU Journal of Technology 14(4): 268-274 (April 2011)

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**The First International Conference on Qualitative Research in Nursing and Health
Wiang Inn Hotel, Chiang Rai, Thailand, 1-3 December 2010**

1. Mental Health Services and Sexual/Gender Minority Clients in Bangkok, Thailand:
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Mental Health Services and Sexual/Gender Minority Clients in Bangkok, Thailand: Views by Service Users and Service Providers

Timo Ojanen

**Master of Science in Counseling Psychology (MS CP) Degree Program,
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This qualitative study explored how Thai psychologists, psychiatrists and their sexual/gender minority clients view these minorities and professional mental health services in Bangkok, Thailand. 16 Bangkok-based Thai nationals were interviewed (3 gay clients, 3 transgendered clients, 1 other client, 5 psychologists, and 4 psychiatrists). Neither clients nor practitioners openly viewed homosexuality as abnormal; views on transgenderism were more diverse. Only 1 psychologist viewed either as changeable, and added that only he offers therapy aimed at sexual orientation change in Thailand. Services openly based on a pathologizing model of homosexuality thus seem rare in the context. Many practitioners viewed service provision to sexual/gender minority clients as little or no different from other service provision, but also expressed views about distinct characteristics of such clients or issues that need to be considered when providing services to them. Parental pressure, sexual/relationship issues, depression, and SRS readiness evaluation were some key issues among these client groups. Key problems in service provision include lack of personnel resources on the public sector (allowing few opportunities for counseling); stigmatization of service use, and low level of practitioner knowledge, especially on community resources. Sufficient budgeting, training, and online/hotline services are ways to address these problems.

Keywords: Psychology, psychiatry, sexual/gender minorities, mental health services, Thailand.

Presented at: The First International Conference on Qualitative Research in Nursing and Health on the theme "Situating and Stipulating Qualitative Health Research in Today's Practices", Wiang Inn Hotel, Chiang Rai, Thailand, 1-3 December 2010.

Published in: Abstract published in the Book of Abstracts of the First International Conference on Qualitative Research in Nursing and Health, p. 63.

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The 5th International Conference on Hybrid Artificial Intelligence Systems (HAIS 2010)

San Sebastián, Spain, 23-25 June 2010

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A Dual Network Adaptive Learning Algorithm for Supervised Neural Network with Contour Preserving Classification for Soft Real Time Applications

Piyabute Fuangkhn and Thitipong Tanprasert

Faculty of Science and Technology

A framework presenting a basic conceptual structure used to solve adaptive learning problems in soft real time applications is proposed. Its design consists of two supervised neural networks running simultaneously. One is used for training data and the other is used for testing data. The accuracy of the classification is improved from the previous works by adding outpost vectors generated from prior samples. The testing function is able to test data continuously without being interrupted while the training function is being executed. The framework is designed for a parallel processing and/or a distributed processing environment due to the highly demanded processing power of the repetitive training process of the neural network.

Keywords: Supervised neural network, outpost vector, contour preserving classification, feed-forward back-propagation, soft real time applications.

Presented at: The 5th International Conference on Hybrid Artificial Intelligence Systems (HAIS 2010), San Sebastián, Spain, 23-25 June 2010.

Published in: Proc. HAIS 2010, Part I, Manuel Graña Romay, Emilio Corchado and M. Teresa Garcia Sebastian (eds.), Lecture Notes in Computer Science, 2010, vol. 6076/2010, pp. 128-135, Springer-Verlag, Berlin, Germany.

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Nonparametric Measures of Association in Business Research

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In many business researches, studies are frequently conducted in order to determine the relationship between two sets of attributes or variables and the degree of their relation. Data often consist of counts of the number of units with given attributes which both are categorical and ordered data. These may be presented in contingency tables. A contingency table is essentially a display format used to analyze the relationship between two or more categorical variables and the chi-square test is always used to test the significance of contingency tables. Even though a chi-square test may show the statistical significance between two variables, the degree of association has been rarely indicated. This paper presents the uses and limitations of the various measures of association and their interpretation. Several examples in the business research field are presented. Additionally, the application of nonparametric measures of association in data analysis and measuring the degree of association between two sets of categorical variables are discussed.

Keywords: Chi-square test of independence, contingency table, measures of association, nonparametric methods.

Presented at: The International Conference on Business and Information (BAI 2010), Rihga Royal Hotel Kokura, Kitakyushu, Japan, 5-7 July 2010.

Published in: Proc. BAI 2010, vol. 7. Available:
<<http://bai-conference.org/files/BAI2010%20Proceeding/Papers/2.Marketing/2097.pdf>>.

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The Impact of Employee's Satisfaction, Organization Commitment and Work Commitment to Turnover Intention: A Case Study of IT Outsourcing Company in Thailand

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Nowadays, information technology plays an important role in business which leads to an increase of the number of IT outsourcing companies. As a result of this growth, there is an increase of the competition to find well-trained IT professionals. This makes the IT companies, which are providing the external IT professionals for the IT services, to have an increase of the number of turnovers. It could be one of the good reasons for turnovers that the IT professionals always sit and work in the clients' offices. Therefore, the IT service providers are worrying about the employees quitting their jobs and starting to work with their clients. The purpose of this study is to find out the relationships of employees' job satisfaction, organization commitment and work commitment to the turnover intention. The results have shown that the employees agree that job satisfaction and organizational commitment have no effect on their turnover intention, except only for work commitment that has an effect on their turnover intention and decision.

Keywords: Job satisfaction, organizational commitment, work commitment, turnover intention.

Presented at: The International Conference on Business and Information (BAI 2010), Rihga Royal Hotel Kokura, Kitakyushu, Japan, 5-7 July 2010.

Published in: Proc. BAI 2010, vol. 7. Available:
<<http://bai-conference.org/files/BAI2010%20Proceeding/Papers/7.OB&HRM/7204.pdf>>.

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Traffic Policing over Various Ad Hoc Networks and Inter-Vehicular Communications

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In this paper, the Policing Traffic Management (PTM) is applied to improve the Quality of Service (QoS) over Inter-Vehicular Communications (IVCS). Bangkok is the capital city, and it is crowded with Ad Hoc nodes, such as Mobile Ad Hoc Networks (MANET), FleetNET, CARNET, BTSNET and electronic devices. Each network has unique data traffic characteristics. For MANET, most traffic is video and voice traffic; for BTSNET is data traffic; for CARNET is data and video traffic; and for FleetNET is voice and data traffic. BTSNET can be implemented in regular traffic patterns for helping other networks to use it as a set of intermediate nodes for delivering their traffic. But some places are congested and packet drops are emerging which will degrade the QoS of Multimedia traffic. The proposed PTM algorithm is an extension of the Adaptive Rate Control algorithm (ARC) which mainly improves the QoS performance by adjusting the data transmission rate, rather than the fixed rate, based on traffic priority as voice, video and data after the collection of the current number of packet drops, each data rate and packet delay time. Besides, this scheme will allow some dropped packets to be retransmitted based on priority. Several simulations are performed using NS-2 and EZsim under the congested situation and the results from our proposed algorithm are compared to the ones from the traditional method without a policing scheme. We found impressive results that support our algorithm.

Keywords: MANET, IVCS, BTSNET, ad hoc network, routing protocol.

Presented at: The 5th International Conference on Embedded and Multimedia Computing (EMC 2010), Cebu, Philippines, 11-13 August 2010.

Published in: Proc. EMC 2010, Available:
<<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5575762>>.

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Clustering Approach to Examination Scheduling

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The difficulty in examination scheduling is to draw an examination timetable by taking a number of different constraints into account. This paper attempts to optimize two major constraints - to minimize the examination time conflicts and the number of consecutive examinations for a student in a day. Clustering method is applied by analyzing exam enrollments and then groups students into clusters so that students within a cluster are having more similar subject combinations to each other than those in other clusters. The purpose of clustering is to effectively arrange the order of exams to be allocated into a suitable exam period. Since exams are scheduled by clusters, it solves the exam conflicts for the students within the same cluster whose exam conflicts are closely related to each other.

Keywords: Examination scheduling, data mining, clustering, heuristic.

Presented at: The 3rd International Conference on Advanced Computer Theory and Engineering (ICACTE 2010), Chengdu, China, 20-22 August 2010.

Published in: Proc. ICACTE 2010, vol. 5, pp. 228-232.

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Hierarchical Kohonen Network for Clustering the Large Quantities of Multi-Variate Data

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The Kohonen Network is a powerful tool in the exploratory phase of data mining. It is capable of projecting high-dimensional data onto a low, usually 2-dimensional grid of neurons with good neighborhood preservation and it is a good tool for dimensional reduction. However, when dealing with the large quantities of high-dimensional data, large size networks should be used and the computation becomes extremely time-consuming. The Hierarchical Kohonen Network is a combination of a multi-branching decision tree and the Kohonen Network, one of the solutions to overcome the drawback of the Kohonen Network. A comparison between the Kohonen Network and the Hierarchical Kohonen Network is done and a possible way to enlarge the size of the Kohonen Network through the Hierarchical Kohonen Network will be discussed.

Keywords: Clustering, Kohonen network, exploratory data analysis, multi-variate data, self-organizing map.

Presented at: The 1st Annual International Conference on Infocomm Technologies in Competitive Strategies (ICT 2010), Mandarin Orchard Hotel, Singapore, 25-26 October 2010.

Published in: Proc. ICT 2010, pp. 140-144.

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Multi-Constrained Path (MCP) QoS Routing in OLSR based on Multiple Additive QoS Metrics

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Routing protocols for mobile ad hoc networks have been researched for several decades. However, it is not an easy task to implement or apply an effective routing algorithm for them due to their characteristics, namely highly dynamic topology and limited resources. Traditional ad hoc routing protocols find the best path in terms of delay or hop count, which can lead to network congestion in high-traffic-load situations. Hence, many QoS routing algorithms for these networks have also been proposed to improve the network performance. However, most of them find the best path using one QoS metric at a time (if there is a tie, another metrics will be triggered) which is not flexible enough to support many kinds of applications, since they require more stringent control on various QoS constraints. Thus, in this research, we propose MCP QoS routing based on a nonlinear cost function, which is a combination of multiple additive QoS parameters. The routing protocol under our consideration here is called Optimized Link State Routing Protocol (OLSR). We investigate the performance of our algorithm by simulation which demonstrates the important improvement over standard ad hoc routing protocols.

Keywords: Routing protocols, mobile ad hoc networks, network congestion, nonlinear cost function

Presented at: The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010), Meiji University, Tokyo, Japan, 26-29 October 2010.

Published in: Proc. ISCIT 2010, pp. 226-231.

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Investigation of Performance Trade Off in Motion Estimation Algorithms on Sub-Pixel Displacement

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This paper presents a performance evaluation of two different sub-pixel motion estimation algorithms, one based on Block-Matching and the other based on optical flow to obtain sub-pixel displacement. On block-matching, we focus on block-based full search (FS), three-step search (TSS) [1], two-dimensional logarithm search (TDL) [2], cross-search algorithm (CSA) [3], a new three-step search algorithm (NTSS) [4], a novel four-step search algorithm (NFSS) [5], a block-based gradient descent search algorithm (BBGDS) [6], a new diamond-search algorithm (DS) [7] and hexagon-search algorithm (HS) [8]. And on optical flow, we focus on 2D optical flow block-based full search algorithm (OF), a bidirectional confidence based optical flow algorithm (BCOF) [9]. These are evaluated based on mean average error (MAE), peak signal to noise ratio (PSNR), and computational time. These experimental results are comprehensively tested on several standard sequences such as AKIYO, COASTGUARD, CONTAINER, and FOREMAN.

Keywords: Three-step search, two-dimensional logarithm search, cross-search algorithm, three-step search algorithm, four-step search algorithm, block-based gradient descent search algorithm, diamond-search algorithm, hexagon-search algorithm.

Presented at: The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010), Meiji University, Tokyo, Japan, 26-29 October 2010.

Published in: Proc. ISCIT 2010, pp. 1,013-1,018.

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A Non-linear Illuminations Balancing for Reconstructed Degraded Scanned Text-Photo Image

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Due to the advancement of digital media, a large number of electronic books are digitized from old paper books through digital cameras or scanners. The scanned images often contain distractions such as noises outside the page boundary, skewed pages, and irregular distributions of image illumination that may degrade the quality of the scanned images. As for this paper, we propose an alternative algorithm to improve the illuminated distribution of the scanned images. The algorithm can be applied on the uneven illumination where significant background shadows or illuminations exist. It was tested with text-photo images including different types of documents and desecrations. The experimental results have shown that the proposed algorithm has produced a slight improvement in performance in some cases of the text-based images, yet the improvement can be clearly seen for the text-photo images as the results were compared with LLBT and SIBT methods.

Keywords: Digitization, uneven illuminations, light balance, object mark, and edge detection.

Presented at: The 10th IEEE International Symposium on Communications and Information Technologies (ISCIT 2010), Meiji University, Tokyo, Japan, 26-29 October 2010.

Published in: Proc. IEEE ISCIT 2010, pp. 1,158-1,163.

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Performance Evaluation of Ad Hoc Routing Protocols to Deliver MPEG-4 Traffic

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A mobile ad hoc network is an infrastructureless wireless network with limited bandwidth and highly dynamic topology. It can support wide variety of applications by using specialized routing protocols, either proactive or reactive protocols. However, the attempt to support multimedia applications for the delivery of voice and video data over an ad hoc network is very challenging due to its characteristics mentioned above. The MPEG-4 encoding schemes seem to be suitable for ad hoc networks since they offer high video quality with higher compression ratio than other MPEG standards. Because of this motivation, a performance investigation on MPEG-4 traffic delivery over an ad hoc network is required. Hence, we construct a simulation to demonstrate the performance of various ad hoc routing protocols, including both proactive and reactive protocols, when they deliver MPEG-4 bitstreams.

Keywords: Mobile ad hoc network, Infrastructureless wireless network, dynamic topology, specialized routing protocols.

Presented at: The 12th IEEE International Conference on Communication Technology (ICCT 2010), Nanjing, China, 11-14 November 2010.

Published in: Proc. ICCT 2010, pp. 207-210.

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Standardization of Socio-Economic Status (SES) Classification in Thailand Market Research Industry

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Over the past decade, there has been a continual growth in the Thailand market research industry. There are now over 40 market research companies in Thailand, of which 10 are international research companies and the rest are local companies.

Throughout the years, many market researchers in Thailand have repeatedly been confronted with the issue of SES classifications because each market research company has used its own classification and thus they differ from one another. As a result, many research studies of the same sample are not comparable if different classifications of SES are used.

TMRS recognized the real need to have a standardized socio-economic status classification in order to gain a uniform definition of each social economic class.

The National Statistical Office (NSO) conducts a nationwide census on income and expenditures. The survey of income is conducted annually, and the survey of expenditures is conducted every two years. TMRS uses the income and expenditure data of 2009 to analyze the SES classifications.

The total sample size was ($n = 43,016$ households), collected from 76 provinces. The definitions of the areas are:

Bangkok: Bangkok and the Metropolitan area;

Up-country urban: Defined by NSO as Municipal areas (Nai Tessabahn);

Up-country rural: Defined by NSO as Non-Municipal areas (Nok Tessabahn).

The raw data from NSO was analyzed in 3 steps as follows: Step 1: Data Preparation and Data Transformation; Step 2: Screening and Grouping Living & Asset Variables; Step 3: Classified Family Incomes into 12 Subclasses by Living & Asset Ownership Variables.

The edited final results yield 8 classifications of SES for each area.

Class	BKK		UPC – URBAN		UPC – RURAL	
E	0 – 7,500	6%	0 - 5,000	7%	0 – 3,200	8%
D	7,501-18,000	32%	5,001 – 10,000	21%	3,201-6,500	23%
C-	18,001 – 24,000	14%	10,001 – 15,000	19%	6,501 – 11,000	26%
C	24,001 – 35,000	16%	15,001 – 22,500	20%	11,001 – 20,000	24%
C+	35,001 – 50,000	12%	22,501 – 33,000	14%	20,001 – 24,000	5%
B	50,001 – 85,000	12%	33,001 – 55,000	12%	24,001 – 35,000	7%
A	85,001 – 160,000	6%	55,000-85,000	5%	35,001 – 58,000	5%
A+	160,000+	2%	85,000+	2%	58,000+	2%

Keywords: Market research industry, TMRS, NSO,

Presented at: The 2nd Asia Pacific Research Committee Conference (ARPC 2010), Tokyo, Japan, 25-26 November 2010.

Published in: The representative paper of Thailand in ARPC 2010.

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Alert Routing Protocol for Inter Vehicular Communications System (IVCS)

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A new scheme for broadcasting the alert messages over an ad hoc network will be presented in this paper. In the situation of an IVCS ad hoc network node being caught by an accident or needing help, the information about this situation must be relayed to other ad hoc nodes in the network as fast as possible. In such cases, in the metro and the business area, which is crowded with MANet, IVCS, and other types of ad hoc nodes, there is a high probability of an accident happening. When an IVCS ad hoc node is in an accident or needs help, it will broadcast an alert message to warn other IVCS ad hoc nodes to re-route and escape the traffic jam and this will ease the rescuers' way through traffic to the node in distress. However, some of the IVCS ad hoc nodes might not receive the alert message in time due to the limitation of the network infrastructure that lacks robustness and sensitivity to mobility. Therefore, the traffic patterns were studied and evaluated to provide more reliable results with a successful delivery of alert messages to as many as possible of the other IVCS ad hoc nodes. Also, this scheme was modified from the ad hoc on demand vector (AODV) protocol, which is the legacy in ad hoc routing protocols. The experiment was conducted in the NS2 simulator by testing random waypoint scenario, MGRID scenario and predictable route scenario for BUSnet. Finally, we obtained the impressive results that support our proposed routing scheme.

Keywords: Ad hoc network, MANet, MGRID scenario, network infrastructure, traffic patterns, BUSnet.

Presented at: The 11th International Conference on Intelligent Technologies (InTech 2010) on the theme "Towards Creative Technologies for the 21st Century", Assumption University of Thailand, Bangkok, Thailand, 14-15 December 2010.

Published in: Proc. InTech 2010, pp. 116-120.

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Performance Evaluation of MIPv6 Handoff

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The performance evaluation of Mobile IPv6 based network during handoff is presented in this paper. The handoff process is simulated using NS-2 with Mobiwan. Due to the mobility of the nodes, the network has to perform extra tasks related to handoff management and path update management. These two functions make the communication process complicated by involving many steps, each one contains a number of signaling flows, which cause channel saturation during handoff, and as a result the packet loss increases. Our aim is mainly to evaluate the effect of binding update message mechanism on packet delivery during mobile node to correspondent node and MN to MN communication. In the near future, next generation networks will become the part of core networks and the telecommunication networks are trying to adopt IP-core networks due to cost effectiveness and simple packet transmission, which solve the routing issues, which were faced by circuit switched networks.

Keywords: Handoff process, path update management, signaling flows, packet delivery,

Presented at: The 8th International Bhurban Conference on Applied Sciences and Technology (IBCAST 2011), National Centre for Physics, Islamabad, Pakistan, 10-13 January 2011.

Published in: Proc. IBCAST 2011.

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Optimized Path Selection Process in OLSR Based on Weighted Connectivity Index and Delay

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OLSR, which is one of the proactive ad hoc routing protocols, seems to be appropriate to support various applications, especially multimedia applications, since there is no delay occurring during the route discovery phase. Many algorithms have been proposed to offer QoS routings to OLSR since it has no capability to support QoS. By using the native Multipoint Relays (MPRs) algorithm to select the MPR nodes in OLSR, the optimal path may be hidden since it aims at minimizing the control overhead flooded by MPR nodes. Thus, it limits the number of possible paths known to each node and there is no guarantee that the selected paths by the routing algorithm are the best feasible paths. Hence, we propose a heuristics to find the optimized paths in terms of highest weighted Connectivity Index (CI) and shortest delay in order to improve the performance of the QoS routing algorithm to select the feasible paths to any reachable node in the network. Weighted CI is the combined QoS metric of link capacity and connectivity. Thus, these optimized paths refer to the paths which have enough link capacity and are robust to link failures. We construct the simulation to demonstrate that the proposed algorithm can improve the performance over OLSR and the Shortest-Highest Path algorithm with native MPR, and it is also flexible enough to deliver services in high-mobility networks.

Keywords: Ad hoc routing protocols, multimedia applications, multipoint relays algorithm, shortest-highest path algorithm.

Presented at: The 8th IEEE Annual International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON 2011), Khon Kaen, Thailand, 17-19 May 2011.

Published in: Proc. ECTI-CON 2011, pp. 348-351.

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Performance Analysis on Weighting Factor (α) on Spatial Temporal Gradient Technique and High Confidence Reliability with Sub-pixel Displacement

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Traditionally, the weighting factor (α) is one of the most important parameters of the optical flow based on the temporal gradient technique and directly impacts the optical flow performance. This paper presents a performance analysis of sub-pixel optical flow on Horn-Schunk algorithm (HS) [1] under the kernel model of Barron, Fleet, and Beauchemin (BFB) [2] over various weighting factors (α) concerning the feedback in the Peak Signal to Noise Ratio (PSNR) for the best performance on each frame of a video sequence for comparison. We also investigate over confidence-based optical flow algorithm for high reliability (CBOF) [3] under the best forward and backward optical flow in PSNR of each reconstructed frame and the relationship with the difference on master image sequences for evaluation. Experimental results of the maximum and minimum of the best average in PSNR for each reconstructed video sequence are demonstrated for performance evaluation [4]. These experimental results are comprehensively tested on several standard sequences such as AKIYO, COASTGUARD, CONTAINER, and FOREMAN that have different foreground and background movement characteristics.

Keywords: Optical flow, Horn-Schunk algorithm, Peak Signal to Noise Ratio, confidence-based optical flow algorithm.

Presented at: The 8th IEEE Annual International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON 2011), Khon Kaen, Thailand, 17-19 May 2011.

Published in: Proc. ECTI-CON 2011, pp. 1,043-1,046.

Full paper requisition: <darun@scitech.au.edu; patanavijit@yahoo.com>

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