

*Full Length Research Paper*

# Interface design and netizen behavior of immediate communication software

Pei-Yin Chung<sup>1</sup>, Ying-Hsiu Chen<sup>2</sup>, Cheng-Wu Chen<sup>3,4</sup> and Chin-Jui Chang<sup>5\*</sup>

<sup>1</sup>Department of Information Management, Meiho University, 23, Pingguang Rd., Neipu, Pingtung, Taiwan, R.O.C.

<sup>2</sup>Department of Applied Finance, Yuanpei University, No.306, Yuanpei Street, Hsinchu 30015, Taiwan, R.O.C.

<sup>3</sup>Institute of Maritime Information and Technology, National Kaohsiung Marine University, Kaohsiung 80543, Taiwan, R.O.C.

<sup>4</sup>Global Earth Observation and Data Analysis Center (GEODAC), National Cheng Kung University, No 1, Ta-Hsueh Road, Tainan 701, Taiwan, R.O.C.

<sup>5</sup>Department of Information Management, Transworld University, No. 1221, Jen-Nang Road, Chia-Tong Li, Douliou, Yunlin 64063, Taiwan, R.O.C.

Accepted 17 August, 2011

As Taiwan is becoming more networked coupled with the use of Instant Messaging (IM) which is becoming increasingly popular, instant messaging has become the most popular online activity. The emergence of instant messaging software is used for connecting the relationship between people. However, a combination of interface design with the changing times and the function of instant messaging software and development are also changing. IM is no longer only a chat function, but has also introduced a variety of additional functions, and have joined the emoticons, chat background (situation), animation express (choking sound) with interesting features of dolls resulting from real-time communications software which is not just a simple chat tool, but a full-featured Internet software. instant messaging software not only allows a person to see the other person's face in emoticons and animations Express (choking sound Doll), it also allows users to see each other at the same time express in their present expression. Through our research from the user point of view, the selection of two new instant messaging interface for its assessment of human-computer interaction research; the beginning of the study using experimental methods to enable users to do gymnastics in person, then take the completed questionnaire to give. The results showed that there are two advantages and disadvantages of instant messaging, but on the whole, in regards to MSN Messenger emoticons as compared to other users, Yahoo! Kimo Messenger's audible doll animated interface is more susceptible to love than MSN Messenger Express user interface. However, it is anticipated that its results can provide instant messaging software designers.

**Key words:** Instant messaging, emoticons, animations express (audible dolls), human-computer interactive interface.

## INTRODUCTION

There has been increasing interest in computer-aided techniques and their applications in recent years (Hsiao et al., 2005a, b, c, d, e; Chen et al., 2008d, e, 2011a, b; Chen and Huang, 2011; Shih et al., 2011a, b; Lee et al., 2011), engineering applications (Lu, 2003; Amini and

Vahdani, 2008; Chang et al., 2008; Chen, 2006; Trabia et al., 2008; Tu et al., 2008; Yang et al., 2008a; Shih et al., 2010b; Yeh and Chen, 2010), architectural engineering (Chen et al., 2004, 2010i, 2011c, d; Hsieh et al., 2006; Chen, 2010a, b, c, 2011c, d; Hsu et al., 2010; Liu et al., 2011; Tang et al., 2011), satellite observations (Lin et al., 2009a, b; Lin and Chen, 2010b, 2011; Yeh et al., 2011), marine research (Chen et al., 2005a, b, 2006a, b, c, 2007a, b, c, d, e, f;

\*Corresponding author. E-mail: [charile@twu.edu.tw](mailto:charile@twu.edu.tw).

Chen et al., 2008a, b, c, 2009c; Tseng et al., 2009; Chen, 2009b, c, 2010d, 2011a, b, c), network optimization (Chen et al., 2009g; Chen and Chen, 2010b; Shih et al., 2010a, c; Kuo et al., 2010, 2011; Kuo and Chen, 2011a, b), system development (Chen, 2009a, 2010c; Chen et al., 2009a, b, d, e, f, 2010a, c, d, 2f; Lin and Chen, 2010a; Shih et al., 2011d; Tseng et al., 2011), educational improvement (Chen et al., 2010b; Shih et al., 2010d, 2011, 2011c) and management in the leisure and tourism industries (Yildirim et al., 2009; Zhao et al., 2009; Tsai et al., 2008; Yang et al., 2008b; Yeh et al., 2008; Chen and Chen, 2010a; Chen et al., 2010e, g, h; Lee et al., 2010a, b; Chiang et al., 2010; Tsai and Chen, 2010, 2011). This paper would integrate the computer-aided website and marketing management for the case study of Cliven products. This paper will study the interface technique for business and marketing management.

Firstly, whether it is MSN Messenger, Yahoo Kimo Messenger, ICQ, or Skype, instant messaging software has now become the most popular Internet communication tool. Most netizens living in the network, instant messaging software play an important maintenance tool for interpersonal communication, so that the relationship between people is closely seen. With the emergence of instant messaging software changing times, function is also changing; characters you come to meet are just a piece of cake, instant messaging software has introduced a variety of additional functions, joined the emoticons, chat background (situation), animation express (choke sound dolls) and other interesting features, combining entertainment and personalization features, which are applied to instant messaging software makes it more interesting, an increase of Internet users using instant messaging software, fun chat, instant messaging is not just a simple chat tool instant messaging software, but a full-featured Internet software.

Face to face conversation between users cannot clearly express their emotions, so we used the MSN Messenger and Yahoo Kimo Messenger instant messaging software, and animated emoticons which express the choking sound doll that can be deeply rooted and can more clearly express their emotions.

Now there is more fun in the market competition of instant messaging, due to the fact that each industry has been offering many different features. For free video (webcam) chat network users, due to the inability to see each other's face, we used the MSN Messenger and Yahoo software to study the Kimo Messenger emoticons, and animations Express (choking sound baby) to know what kind of comparison can be used to express the user's mood and expression.

## MATERIALS AND METHODS

MSN Messenger emoticons, animated delivery and Yahoo! Kim Messenger emoticons, audible doll interface introduction are described as highlighted thus:

1. The first interface is the "emoticons": Use of emoticons icon allows users to add more fun to communicate, it can be a more specific demonstration of the user's experience. Figure 1 is MSN Messenger emoticons, and Figure 2 is Yahoo! Kimo Messenger emoticons. MSN Messenger is the different places you can add emoticons, which are more vivid and simple, Yahoo! Kimo Messenger expression patterns cannot be added according to personal preference.

2. The second interface is the "express and Audibles doll animation": no longer just a static symbol is a combination of dynamic movement and sound. Figure 3 shows the animated Express, MSN messenger, and Figure 4 is Yahoo! Kimo Messenger's audible dolls, doll choking sound different from the animated delivery, baby choking sound and style choices are more localized style designs to say hello, goodbye and intimate performance, etc; and animation can express the choice of style but is relatively small.

## RESEARCH ANALYSIS

### Research samples

We previously described the expression of the MSN Messenger interface design, animation, interface and Yahoo! Express Kim Messenger's emoticons interface, choking sound interface in four major child-oriented researches to evaluate the interface of the object.

### Evaluation methods

The subjects' practice started after they completed the questionnaires, and after the data used to analyze the difference between the two interface types were collected.

### Subjects

A total of 30 subjects completed the questionnaires ranging from junior high school to the community school, and each subject used MSN Messenger emoticons, animated delivery and Yahoo! Kimo Messenger emoticons, and audible doll experience.

### Use of equipment

Study in a McDonald's for wireless network equipment, major equipment notebook computers and mouse.

## RESULTS AND DISCUSSION

### Basic statistics users

A questionnaire survey was conducted at first glance on the display of MSN Messenger emoticons interface, and more people were interested in practical subjects to express their own emotions. More people were interested in the Yahoo! Kimo Messenger's audible doll interface, due to the fact that the Interface design doll choking sound was more lively, and the color was also more abundant. Overall, most people assume that the MSN

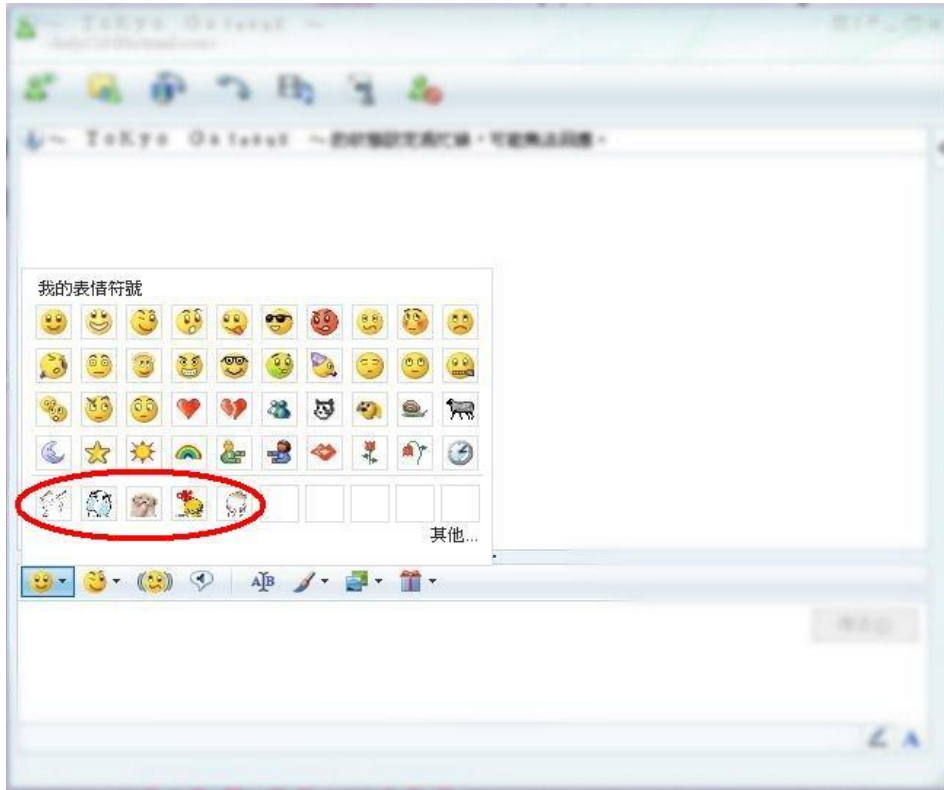


Figure 1. MSN messenger emoticons.

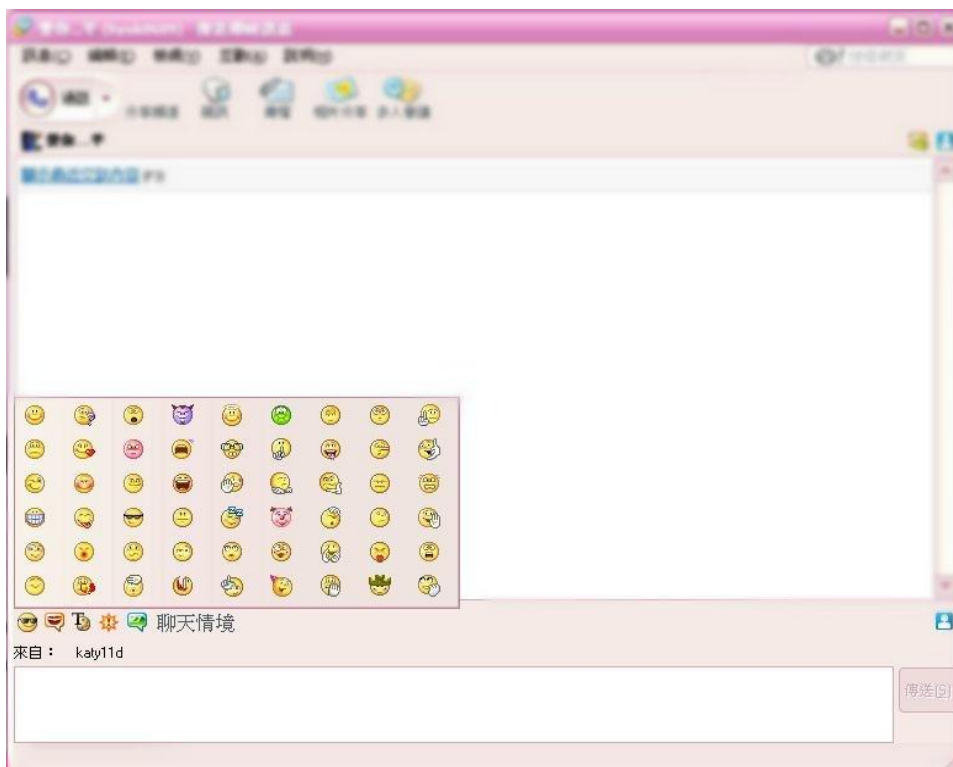


Figure 2. Yahoo! Kimo Messenger emoticons.

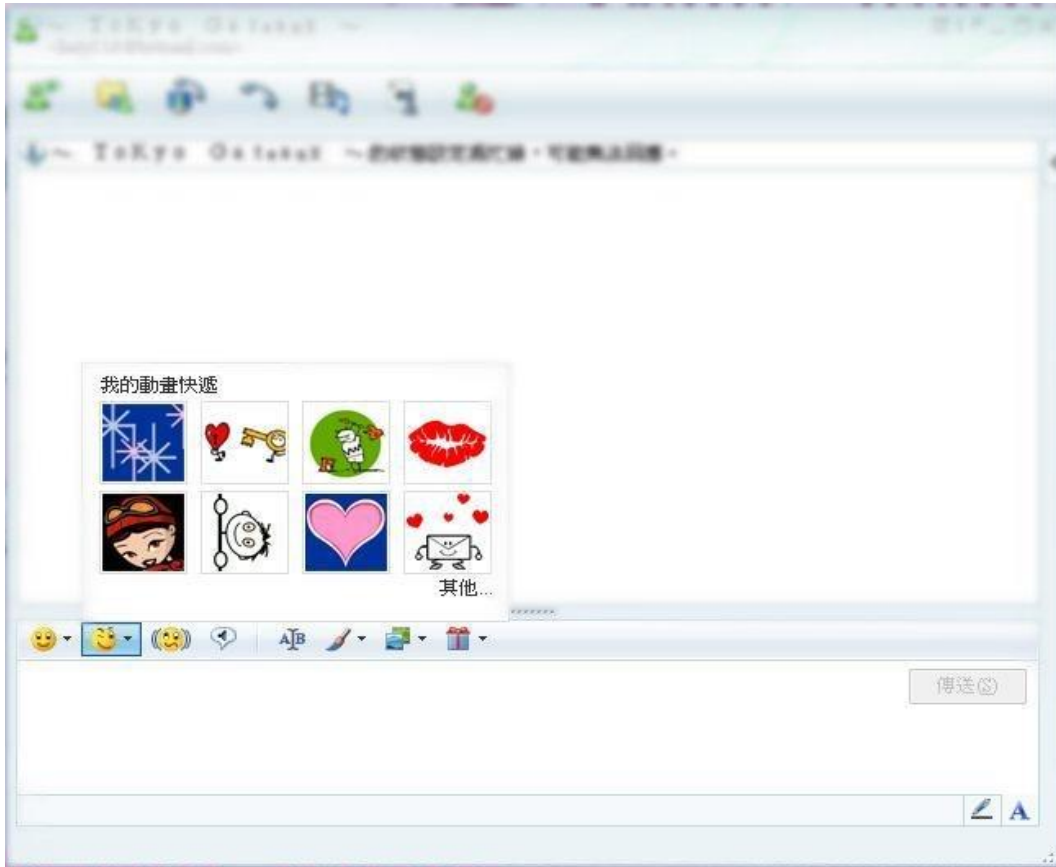


Figure 3. MSN Messenger animated Express.

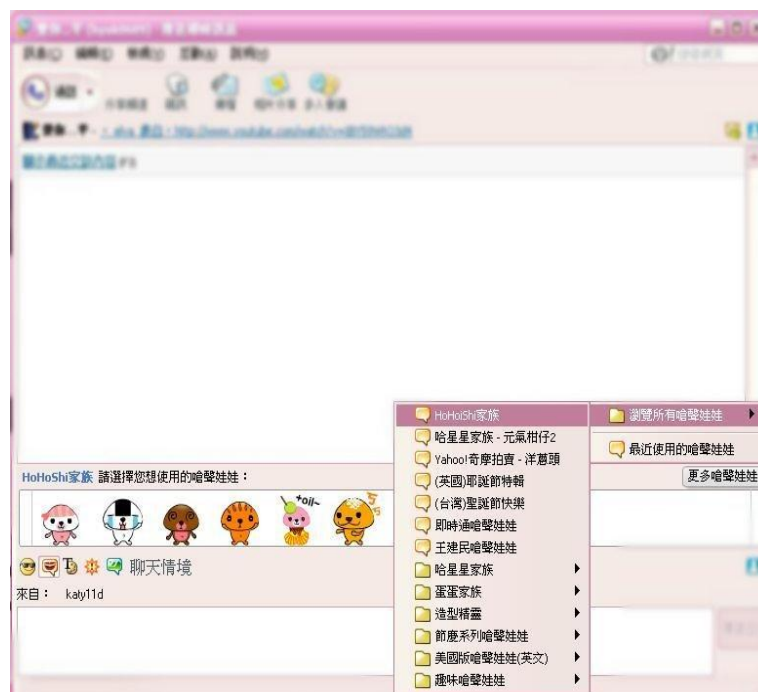


Figure 4. Yahoo! Kimo Messenger voice choking baby.

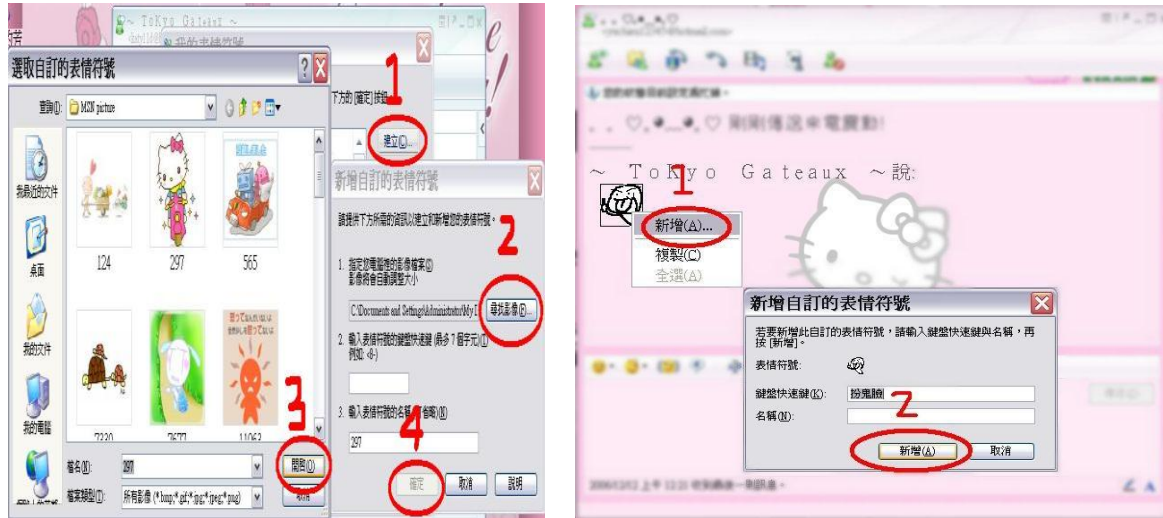


Figure 5. MSN Messenger emoticons new interface.

Table 1. MSN Messenger and Yahoo! Kimo Messenger interface and animated emoticons and audible express interface of different dolls.

Variable	MSN Messenger	Yahoo ! Kimo Messenger
Emoticon interface	Originally built in emoticons, a small number of users and cannot fully express the emotions, but can their new designs (Figures 5, 6), to express the current user's mood.	Than the original built-in MSN Messenger emoticons more, but no more new symbols.
Animation Express interface with the choking sound dolls	Less selective (Figure 3)	More choice (Figure 4)

Messenger was more popular. As for the future, there will be continuity in the use of instant messaging software because of two advantages and disadvantages. Statistics of the results for male and female show that a greater number of people make use of MSN Messenger and a majority of high school students make use of Yahoo! Kimo Messenger.

According to Figure 5, MSN messenger emoticons new interface is added. Furthermore, MSN Messenger and Yahoo! Kimo Messenger interface and animated emoticons and audible express interface of different dolls are shown in Table 1.

**Conclusions**

The survey results can be found in both the interface design of instant messaging software and it has different advantages and disadvantages, but overall, MSN Messenger emoticons and Yahoo! Kimo Messenger and choking sound interface of the more users like dolls. These are the users' point of view, to explore the MSN Messenger emoticons, animated delivery and Yahoo! Kim Messenger emoticons, audible doll effects to the user interface with the hope that the results can provide

reference and thus improve instant messaging software designers.

**ACKNOWLEDGEMENTS**

The author acknowledges the financial support from the National Science Council of Taiwan, R.O.C., under project numbers NSC 98-2221-E-366-006-MY2, NSC 100-2221-E-022-013-MY2, NSC 99-2221-E-265-002 and NSC 100-2628-E-022-002-MY2. The authors are also most grateful for the kind assistance of Dr. NJ Tonukari, Chief-editor of Scientific Research and Essays, and the constructive suggestions of the anonymous reviewers all of which has led to the making of several corrections and suggestions that have greatly aided us in the presentation of this paper.

**REFERENCES**

Amini F, Vahdani R (2008). Fuzzy optimal control of uncertain dynamic characteristics in tall buildings subjected to seismic excitation. *J. Vibration and Cont.*, 14: 1843-1867.  
 Chang CY, Hsu KC, Chiang KH, Huang GE (2008). Modified fuzzy variable structure control method to the crane system with control deadzone problem. *J. Vib. Control*, 14: 953-969.

- Chen CW (2006). Stability Conditions of Fuzzy Systems and Its Application to Structural and Mechanical Systems. *Adv. Eng. Software*, 37: 624-629.
- Chen CW (2009a). Modeling and control for nonlinear structural systems via a NN-based approach. *Expert Syst. Appl.*, 36: 4765-4772.
- Chen CW (2009b). The stability of an oceanic structure with T-S fuzzy models. *Math. Comput. Simul.*, 80: 402-426.
- Chen CW (2010a). Modeling and fuzzy PDC control and its application to an oscillatory TLP structure. *Math. Probl. Eng. An Open Access J.* DOI: 10.1155/2010/120403.
- Chen CW (2010b). Application of fuzzy-model-based control to nonlinear structural systems with time delay: an LMI method. *J. Vib. Control*, 16: 1651-1672.
- Chen CW (2010c). Fuzzy control of interconnected structural systems using the fuzzy Lyapunov method. *J. Vib. Control*, DOI: 10.1177/1077546310379625.
- Chen CW (2011c). Modeling, control and stability analysis for time-delay TLP systems using the fuzzy Lyapunov method. *Neural Comput. Appl.*, 20(4): 527-534.
- Chen CW (2011d). Stability analysis and robustness design of nonlinear systems: an NN-based approach. *Appl. Soft Comput.*, 11(2): 2735-2742.
- Chen CW, Chen CY (2010b). Are educational background and gender moderator variables for leadership, satisfaction and organizational commitment. *Afr. J. Bus. Manage.*, 4: 248-261.
- Chen CW, Chen CY, Yang HC, Chen TH (2007a). Analysis of Experimental Data on Internal Waves with Statistical Method. *Eng. Computat. Int. J. Comput. Aided Eng. Software*, 24: 116-150.
- Chen CW, Chen PC (2010b). "GA-based adaptive neural network controllers for nonlinear systems," *Int. J. Innov. Comput. Inf. Control*, 6: 1793-1803.
- Chen CW, Chen PC, Chiang WL (2010i). Stabilization of adaptive neural network controllers for nonlinear structural systems using a singular perturbation approach. *J. Vib. Control*, DOI: 10.1177/1077546309352827.
- Chen CW, Chen PC. (2010b). GA-based adaptive neural network controllers for nonlinear systems. *Int. J. Innov. Comput. Inf. Control*, 6: 1793-1803.
- Chen CW, Chiang WL, Hsiao FH (2004). Stability Analysis of T-S Fuzzy Models for Nonlinear Multiple Time-Delay Interconnected Systems. *Math. Comput. Simul.*, 66(6): 523-537.
- Chen CW, Chiang WL, Hsiao FH (2005a). Stability Analysis of T-S Fuzzy Models for Nonlinear Multiple Time-Delay Interconnected Systems. *Math. Comput. Simul.*, 66: 523-537.
- Chen CW, Chiang WL, Tsai CH (2006a). Fuzzy Lyapunov Method for Stability Conditions of Nonlinear Systems. *Int. J. Artif. Intell. Tools*, 15: 163-171.
- Chen CW, Lin CL, Tsai CH (2007c). A Novel Delay-Dependent Criteria for Time-Delay T-S Fuzzy Systems Using Fuzzy Lyapunov Method. *Int. J. Artif. Intell. Tools*, 16: 545-552.
- Chen CW, Morris H, Wang L, Lin JW (2009). Managing target the cash balance in construction firms using a fuzzy regression approach. *Int. J. Uncertain. Fuzz.*, 17: 667-684.
- Chen CW, Shen CW, Chen CY, Jeng MJ (2010c). Stability analysis of an oceanic structure using the Lyapunov method. *Eng. Comput.*, 27: 186-204.
- Chen CW, Wang HL, Liu FR, Chen TH (2010f). Application of project cash management and control for infrastructure. *J. Mar. Sci. Technol.*, 18: 644-651.
- Chen CW, Wang MHL, Lin JW (2009g). Managing target the cash balance in construction firms using a fuzzy regression approach. *Int. J. Uncert. Fuzz. Knowl. Based Syst.* 17(5): 667-684.
- Chen CW, Yang, Peter HC, Chen CY, Chang AKH, Chen TH (2008b). Evaluation of inference adequacy in cumulative logistic regression models: an empirical validation of ISW-ridge relationships. *China Ocean Eng.* 22: 43-56.
- Chen CW, Yeh K, Chiang WL, Chen CY, Wu DJ (2007f). Modeling, Control and Stability Analysis for Structural Systems Using Takagi-Sugeno Fuzzy Model. *J. Vib. Control*, 13: 1519-1534.
- Chen CW, Yeh K, Liu FR (2009d). Adaptive fuzzy sliding mode control for seismically excited bridges with lead rubber bearing isolation. *Int. J. Uncert. Fuzz. Knowl. Based Syst.*, 17: 705-727.
- Chen CY (2009c). Amplitude decay and energy dissipation due to the interaction of internal solitary waves with a triangular obstacle in a two-layer fluid system: the blockage parameter. *J. Mar. Sci. Technol.*, 14(4): 499-512.
- Chen CY (2010d). Using discriminant analysis to determine the breaking criterion for an ISW propagating over a ridge. *Environ. Fluid Mech.*, 10(5): 577-586, DOI: 10.1007/s10652-010-9172-1.
- Chen CY (2011a). A critical review of internal wave dynamics. Part 2 – Laboratory experiments and theoretical physics. *J. Vib. Control*, DOI: 10.1177/1077546310397561.
- Chen CY (2011b). A critical review of internal wave dynamics. Part 1 – Remote sensing and in-situ observations. *J. Vib. Control*, DOI: 10.1177/1077546310395971.
- Chen CY (2011c). Statistical and dynamical analyses of propagation mechanisms of solitary internal waves in a two-layer stratification. *J. Mar. Sci. Technol.*, 16(1): 100-114, DOI 10.1007/s00773-010-0112-z.
- Chen CY, Chen CW, Tseng IF (2007e). Localised mixing due to an interfacial solitary wave breaking on seabed topography in different ridge heights. *J. Offshore Mech. Arctic Eng.*, 129: 245-250.
- Chen CY, Hsu John RC, Chen CW (2007). "Wave propagation at the interface of a two-layer fluid system in the laboratory," *J. Mar. Sci. Technol.*, 15: 8-16.
- Chen CY, Hsu John RC, Cheng MH, Chen CW (2008c). "Experiments on mixing and dissipation in internal solitary waves over two triangular obstacles," *Environ. Fluid Mech.*, 8: 199-214.
- Chen CY, Hsu JRC, Chen CW, Cheng MH (2006b). "Numerical model of an internal solitary wave evolution on impermeable variable seabed in a stratified two-layer fluid system," *China Ocean Eng.*, 20(1):61-72.
- Chen CY, Hsu JRC, Chen CW, Cheng MH (2006b). Numerical model of an internal solitary wave evolution on impermeable variable seabed in a stratified two-layer fluid system. *China Ocean Eng.*, 20: 303-313.
- Chen CY, Hsu RC, Chen CW (2005b). Fuzzy Logic Derivation of Neural Network Models with Time Delays in Subsystems. *Int. J. Artif. Intell. Tools*, 14: 967-974.
- Chen CY, Hsu, John RC, Chen CW (2007). Wave propagation at the interface of a two-layer fluid system in the laboratory. *J. Mar. Sci. Technol.*, 15: 8-16.
- Chen CY, Hsu, John RC, Chen CW (2007b). Generation of internal solitary wave by gravity collapse. *J. Mar. Sci. Technol.*, 15: 1-7.
- Chen CY, Hsu, John RC, Cheng MH, Chen CW (2008c). Experiments on mixing and dissipation in internal solitary waves over two triangular obstacles. *Environ. Fluid Mech.*, 8: 199-214.
- Chen CY, Huang PH (2011). Review of an autonomous humanoid robot and its mechanical control. *J. Vib. Control*, DOI: 10.1177/1077546310395974.
- Chen CY, Lee WI, Kuo HM, Chen CW, Chen KH (2010d). The study of a forecasting sales model for fresh food. *Expert Syst. Appl.*, 37: 7696-7702.
- Chen CY, Lin CL, Tseng, I. F., Chen CW (2007d). Dynamic behavior of an internal solitary wave oscillating over variable bathymetry. *Kuwait J. Sci. Eng.*, 34: 153-166.
- Chen CY, Lin JW, Lee, W. I., Chen CW (2010a). Fuzzy control for an oceanic structure: A case study in time-delay TLP system. *J. Vib. Control*, 16: 147-160.
- Chen CY, Liu KC, Liu YW, Huang WC (2010h). A case study of reinforced concrete short column under earthquake using experimental and theoretical investigations. *Struct. Eng. Mech.*, 36: 197-206.
- Chen CY, Shen CW, Chen CW, Liu KFR, Jeng MJ (2009a). A Stability Criterion for Time-Delay Tension Leg Platform Systems Subjected to External Force. *China Ocean Eng.*, 23: 49-57.
- Chen CY, Shih BY, Chou WC (2011a). The development of autonomous low cost biped mobile surveillance robot by intelligent bricks. *J. Vib. Control*, DOI: 10.1177/1077546310371349.
- Chen CY, Shih BY, Chou WC (2011b). "The development of autonomous low cost biped mobile surveillance robot by intelligent bricks," *J. Vib. Control*, DOI: 10.1177/1077546310381101.
- Chen CY, Shih BY, Chou WC (2011b). Obstacle avoidance design for a humanoid intelligent robot with ultrasonic sensors. *J. Vib. Control*, DOI: 10.1177/1077546310381101.
- Chen CY, Shyue SW, Chang CJ (2010g). Association rule mining for

- evaluation of regional environments: Case study of Dapeng Bay, Taiwan. *Int. J. Innov. Comput. Inf. Control*, 6: 3425-3436.
- Chen CY, Tseng IF, Yang HC, Chen CW, Chen TH (2006c). Profile Evolution and Energy Dissipation for Internal Soliton Transmitting over Different Submarine Ridges. *China Ocean Eng.*, 20: 585-594.
- Chen CY, Yang HC, Chen CW, Chen TH (2008a). Diagnosing and revising logistic regression models: effect on internal solitary wave propagation. *Eng. Comput.*, 25: 121-139.
- Chen CY, Yang YF, Chen CW, Chen LT, Chen TH (2010e). Linking the balanced scorecard (BSC) to business management performance: A preliminary concept of fit theory for navigation science and management. *Int. J. Phys. Sci.*, 5: 1296-1305.
- Chen LT, Chen CW, Chen CY (2010b). "Are educational background and gender moderator variables for leadership, satisfaction and organizational commitment," *Afr. J. Bus. Manage.*, 4: 248-261.
- Chen PC, Chen CW, Chiang WL (2008d). "GA-Based Fuzzy Sliding Mode Controller for Nonlinear Systems," *Math. Probl. Eng. An Open Access J.* DOI: 10.1155/2008/325859.
- Chen PC, Chen CW, Chiang WL (2009b). GA-based modified adaptive fuzzy sliding mode controller for nonlinear systems. *Expert Syst. Appl.*, 36: 5872-5879.
- Chen PC, Chen CW, Chiang WL (2011d). Linear matrix inequality conditions of nonlinear systems by genetic algorithm-based adaptive fuzzy sliding mode controller. *J. Vib. Control*, 17(2): 163-173.
- Chen PC, Chen CW, Chiang WL, Yeh K (2009f). "A novel stability condition and its application to GA-based fuzzy control for nonlinear systems with uncertainty," *J. Mar. Sci. Technol.*, 17: 293-299.
- Chen PC, Chen CW, Chiang WL, Yeh K (2009f). A novel stability condition and its application to GA-based fuzzy control for nonlinear systems with uncertainty. *J. Mar. Sci. Technol.*, 17: 293-299.
- Chen PC, Chen CW, Chiang WL, Lo DC (2011c). GA-based decoupled adaptive FSMC for nonlinear systems by a singular perturbation scheme. *Neural Comput. Appl.*, 20(4): 517-526.
- Chen TH, Chen CW (2010). "Application of data mining to the spatial heterogeneity of foreclosed mortgages," *Expert Syst. Appl.*, 37: 993-997.
- Chen TH, Chen CW (2010). Application of data mining to the spatial heterogeneity of foreclosed mortgages. *Expert Syst. Appl.*, 37: 993-997.
- Chen TH, Chen CY, Yang CH, Chen CW (2008e). "A Mathematical Tool for Inference in Logistic Regression with Small-Sized Data Sets – A Practical Application on ISW-Ridge Relationships," *Math. Probl. Eng. An Open Access J.* DOI: 10.1155/2008/186372.
- Chen TH, Yang HC, Chen CY, Chen CW (2009c). "Application of Logistic Regression Model: Propagation Effect on Internal Soliton," *J. Chung Cheng Instit. Technol.*, 37: 1-10.
- Chen CY, Hsu, John RC, Chen CW (2007b). "Generation of internal solitary wave by gravity collapse," *J. Mar. Sci. Technol.*, 15: 1-7.
- Chen TH, Yang HC, Chen CY, Chen CW (2009c). Application of Logistic Regression Model: Propagation Effect on Internal Soliton. *J. Chung Cheng Instit. Technol.*, 37: 1-10.
- Chiang WL, Chiou DJ, Chen CW, Tang JP, Hsu WK, Liu TY (2010). Detecting the sensitivity of structural damage based on the Hilbert-Huang transform approach. *Eng. Comput.*, 27: 799-818.
- Chiang WL, Chiou DJ, Tang JP, Hsu WK, Liu TY (2010). "Detecting the sensitivity of structural damage based on the Hilbert-Huang transform approach" *Eng. Comput.*, 27: 799-818.
- Hsiao FH, Chen CW, Liang YW, Xu SD, Chiang WL (2005e). "T-S Fuzzy Controllers for Nonlinear Interconnected Systems with Multiple Time Delays," *IEEE Trans. Circuits Systems-I: Regular Papers*, 52: 1883-1893.
- Hsiao FH, Chen CW, Liang YW, Xu SD, Chiang WL (2005e). T-S Fuzzy Controllers for Nonlinear Interconnected Systems with Multiple Time Delays. *IEEE Trans. Circuits Systems-I : Regular Papers*, 52: 1883-1893.
- Hsiao FH, Chen CW, Wu YH, Chiang WL (2005a). Fuzzy Controllers for Nonlinear Interconnected TMD Systems with External Force. *J. Chinese Instit. Eng.*, 28: 175-181.
- Hsiao FH, Chiang WL, Chen CW (2005d). "Fuzzy Control for Nonlinear Systems via Neural-Network-Based Approach," *Int. J. Computational Methods Eng. Sci. Mech.*, 6: 145- 152.
- Hsiao FH, Chiang WL, Chen CW (2005d). Fuzzy Control for Nonlinear Systems via Neural-Network-Based Approach. *Int. J. Comput. Methods Eng. Sci. Mech.*, 6: 145- 152.
- Hsiao FH, Chiang WL, Chen CW, Xu SD, Wu SL (2005c). "Application and Robustness Design of Fuzzy Controller for Resonant and Chaotic Systems with External Disturbance," *Int. J. Uncert. Fuzz. Knowl. Based Syst.*, 13: 281-295.
- Hsiao FH, Chiang WL, Chen CW, Xu SD, Wu SL (2005c). Application and Robustness Design of Fuzzy Controller for Resonant and Chaotic Systems with External Disturbance. *Int. J. Uncert. Fuzz. Knowl. Based Syst.*, 13: 281-295.
- Hsiao FH, Hwang JD, Chen CW, Tsai ZR (2005b). "Robust Stabilization of Nonlinear Multiple Time-Delay Large-scale Systems via Decentralized Fuzzy Control," *IEEE Trans. Fuzzy Syst.*, 13: 152- 163.
- Hsiao FH, Hwang JD, Chen CW, Tsai ZR (2005b). Robust Stabilization of Nonlinear Multiple Time-Delay Large-scale Systems via Decentralized Fuzzy Control. *IEEE Trans. Fuzzy Syst.*, 13: 152- 163.
- Hsieh TY, Wang MHL, Chen CW (2006). "A New Viewpoint of S-Curve Regression Model and its Application to Construction Management," *Int. J. Artif. Intell. Tools*, 15: 131-142.
- Hsieh TY, Wang MHL, Chen CW (2006). A New Viewpoint of S-Curve Regression Model and its Application to Construction Management. *Int. J. Artif. Intell. Tools*, 15: 131-142.
- Hsu WK, Huang PC, Chen CW, Chang CC, Hung DM, Chiang WL (2010). An integrated flood risk assessment model for property insurance industry in Taiwan. *Natural Hazards*, DOI 10.1007/s11069-011-9732-9.
- Kuo HM, Chen CW (2011a). Application of quality function deployment to improve the quality of Internet shopping website interface design. *Int. J. Innov. Comput. Inf. Control*, 7(1): 253-268.
- Kuo HM, Chen CW (2011b). A novel viewpoint on information and interface design for auction website. *Hum. Fact. Ergon. Manuf. Serv. Ind.*, DOI: 10.1002/hfm.20274.
- Kuo HM, Chen CW, Chen CW (2010). A behavioral model of the elderly Internet consumer: a case study. *Int. J. Innov. Comput. Inf. Control*, 6(8): 3507-3518.
- Kuo HM, Chen CW, Chen CW (2011). A study of merchandise information and interface design on B2C websites. *J. Mar. Sci. Technol.*, 19(1): 15-25.
- Lee SF, (2004), service quality, service value, customer satisfaction and behavioral intentions relationship- Based on empirical PCSC logistics services, Master Thesis, National Cheng Kung University.
- Lee WI (2010). The development of a qualitative dynamic attribute value model for healthcare institutes. *Iran. J. Public Health*, 39(4): 15-25.
- Lee WI, Chen CW, Chen TH, Chen CY (2010). "The relationship between consumer orientation, service value, medical care service quality and patient satisfaction: The case of a medical center in Southern Taiwan". *Afr. J. Bus. Manage.*, 4(4): 448-458.
- Lee WI, Chen CW, Chen TH, Chen CY (2010a). "The relationship between consumer orientation, service value, medical care service quality and patient satisfaction: The case of a medical center in Southern Taiwan," *Afr. J. Bus. Manage.*, 4: 448-458.
- Lee WI, Chen CW, Chen TH, Chen CY (2010a). The relationship between consumer orientation, service value, medical care service quality and patient satisfaction: The case of a medical center in Southern Taiwan. *Afr. J. Bus. Manage.*, 4: 448-458.
- Lee WI, Chen CW, Wu CH (2010b). "Relationship between quality of medical treatment and customer satisfaction - a case study in dental clinic association," *Int. J. Innov. Comput. Inf. Control*, 6: 1805-1822.
- Lee WI, Chen CW, Wu CH (2010b). Relationship between quality of medical treatment and customer satisfaction - a case study in dental clinic association. *Int. J. Innov. Comput. Inf. Control*, 6: 1805-1822.
- Lee WI, Chen CY, Kuo HM, Sui YC (2010c). The development of half-circle fuzzy numbers and application in fuzzy control. *J. Vib. Control*, 16(13): 1977-1987, DOI: 10.1177/1077546309349849.
- Lee WI, Chen CY, Kuo HM, Sui YC (2010). The Development of Half-circle Fuzzy Numbers and Application in Fuzzy Control. *J. Vib. Control*, 16: 1977-1987.
- Lee WI, Chiu YT, Liu CC, Chen CY (2011). Assessing the effects of consumer involvement and service quality in a self-service setting. *Hum. Factors Ergon. Manuf. Serv. Ind.*, 21(5): 504-515, DOI: 10.1002/hfm.20253.

- Lee WI, Lin CH (2011). Consumer Hierarchical Value Map Modeling in the Healthcare Service Industry, *Afr. J. Bus. Manage.*, 5(3): 722-736.
- Lin CL, Wang JF, Chen CY, Chen CW, Yen CW (2009b). "Improving the generalization performance of RBF neural networks using a linear regression technique," *Expert Syst. Appl.*, 36: 12049-12053.
- Lin CL, Wang JF, Chen CY, Chen CW, Yen CW (2009b). Improving the generalization performance of RBF neural networks using a linear regression technique. *Expert Syst. Appl.*, 36: 12049-12053.
- Lin JW, Huang CW, Shih CH, Chen CY (2011). Fuzzy Lyapunov Stability Analysis and NN Modeling for Tension Leg Platform Systems. *J. Vib. Control*, 17: 151-158.
- Lin KH, Shih LH (2010). "An optimization model of product line rollover: A case study of the notebook computer industry in Taiwan". *Afr. J. Bus. Manage.*, 4(11): 2258-2268.
- Lin ML, Chen CW (2010). "Application of fuzzy models for the monitoring of ecologically sensitive ecosystems in a dynamic semi-arid landscape from satellite imagery," *Eng. Comput.*, 27: 5-19.
- Lin ML, Chen CW (2010a). Application of fuzzy models for the monitoring of ecologically sensitive ecosystems in a dynamic semi-arid landscape from satellite imagery. *Eng. Comput.*, 27: 5-19.
- Lin ML, Chen CW (2010b). Stability analysis of community and ecosystem hierarchies using the Lyapunov method. *J. Vib. Control*, DOI: 10.1177/1077546310385737.
- Lin ML, Chen CW (2011). Using GIS-based spatial geocomputation from remotely sensed data for drought risk-sensitive assessment. *Int. J. Innov. Comput. Inf. Control*, 7(2): 657-668.
- Lin ML, Chen CW, Wang QB, Cao Y (2009a). "Fuzzy model-based assessment and monitoring of desertification using MODIS satellite imagery," *Eng. Comput.*, 26: 745-760.
- Lin ML, Chen CW, Wang QB, Cao Y (2009a). Fuzzy model-based assessment and monitoring of desertification using MODIS satellite imagery. *Eng. Comput.*, 26: 745-760.
- Liu TY, Chiang WL, Chen CW, Hsu WK, Lu LC, Chu TJ (2011). Identification and monitoring of bridge health from ambient vibration data. *J. Vib. Control*, 17(4): 589-603. z
- Shih BY, Chang CJ, Chen AW, Chen CY (2010c). Enhanced MAC Channel Selection to Improve Performance of IEEE 802.15.4. *Int. J. Innov. Comput. Inf. Control*, 6: 5511-5526.
- Shih BY, Chen CY, Chang H, Ma JM (2011b). Dynamics and control for robot manipulators using a greedy algorithm approach. *J. Vib. Control*, DOI: 10.1177/1077546311407649.
- Shih BY, Chen CY, Chou WC (2011a). Obstacle avoidance using a path correction method for autonomous control of a biped intelligent robot. *J. Vib. Control*, 17(10): 1567-1573, DOI: 10.1177/1077546310372004.
- Shih BY, Chen CY, Li CE (2010d). The exploration of mobile mandarin learning system by the application of TRIZ theory. *Comput. Appl. Eng. Educ.*, DOI : 10.1002/cae.20478.
- Shih BY, Chen CY, Shih CH, Tseng JY (2010a). The development of enhancing mechanisms for improving the performance of IEEE 802.15.4. *Int. J. Phys. Sci.*, 5: 884-897.
- Shih BY, Lee WI, Chen CY (2011d). A hybrid artificial intelligence sales-forecasting system in the convenience store industry. *Hum. Factors Ergon. Manuf. Serv. Ind.*, DOI: 10.1002/hfm.20272.
- Shih CH, Wakabayashi N, Yamamura S, Chen CY (2011c). A context model with a time-dependent multi-layer exception handling policy. *Int. J. Innov. Comput. Inf. Control*, 7(5A): 2225-2234.
- Shih CH, Yamamura S, Chen CY (2010b). Analysis of control structure for turning maneuvers. *Math. Problems Eng.*, 2010, DOI:10.1155/2010/481438.
- Tang JP, Chiou DJ, Chen CW, Chiang WL, Hsu WK, Chen CY, Liu TY (2011). A case study of damage detection in benchmark buildings using a Hilbert-Huang Transform-based method. *J. Vib. Control*, 17(4): 623-636.
- Trabia MB, Renno JM, Moustafa KAF (2008). Generalized design of an anti-swing fuzzy logic controller for an overhead crane with hoist. *J. Vib. Control*, 14: 319-346.
- Tsai CH, Chen CW (2010). An earthquake disaster management mechanism based on risk assessment information for the tourism industry-A case study from the island of Taiwan. *Tourism Manage.*, 31(4): 470-481.
- Tsai CH, Chen CW (2011). The establishment of a rapid natural disaster risk assessment model for the tourism industry. *Tourism Manage.*, 32(1): 158-171.
- Tsai CH, Chen CW, Chiang WL, Lin ML (2008). Application of Geographic Information System to the Allocation of Disaster Shelters via Fuzzy Models. *Eng. Comput. Int. J. Comput. Aided Eng. Software*, 25: 86-100.
- Tseng CP, Chen CW, Liu FR (2011). Risk control allocation model for pressure vessels and piping project. *J. Vib. Control*, DOI: 10.1177/1077546311403182.
- Tseng CP, Chen CW, Tu YP (2011). A new viewpoint on risk control decision models for natural disasters. *Natural Hazards*, DOI 10.1007/s11069-011-9861-1.
- Tseng IF, Chen CY, Kuo HM (2009). Nonlinear internal wave run-up on impermeable steep slopes. *J. Offshore Mech. Arctic Eng. ASME*, 131 (4): doi:10.1115/1.3168528.
- Yang CH, Chen TH, Chen CW, Chen CY, Liu CT (2008b). Accuracy evaluation of a diagnostic test by detecting outliers and influential observations. *China Ocean Eng.*, 22: 421-429.
- Yang HC, Chen CY, Chen CW, and Chen TH (2008a). Estimation on internal wave reflection in a two-layer fluid system by cumulative logistic regression model. *J. Mar. Sci. Technol.*, 16: 44-51.
- Yeh K, Chen CW (2010). Stability analysis of interconnected fuzzy systems using the fuzzy Lyapunov method. *Math. Problems Eng. An Open Access J.*, p.10. Doi: 10.1155/2010/734340.
- Yeh K, Chen CW, Lo DC (2011). Neural-network fuzzy control for chaotic tuned mass damper systems with time delays. *J. Vib. Control*, DOI: 10.1177/1077546311407538.
- Yeh K, Chen CY, Chen CW (2008). Robustness Design of Time-Delay Fuzzy Systems Using Fuzzy Lyapunov Method. *Appl. Math. Comput.*, 205: 568-577.
- Yildirim S, Erkaya S, Eski I, Uzmay I (2009). Noise and vibration analysis of car engines using proposed neural network. *J. Vib. Control*, 15: 133-156.
- Zhao FG, Chen J, Guo L, Li X (2009). Neuro-fuzzy based condition prediction of bearing health. *J. Vib. Control*, 15: 1079-1091.