



Lim C-K, [林楚卿], Hsu Y-L [徐業良]. *Steps & Flowers: Development of a multi-dimensional interactive platform for older adults in the home environment. Journal of Gerontechnology and Service Management 2015;3(2):131-144;* doi:10.6283/JOCSG.2015.3.2.131 This project aims to develop a multi-dimensional interactive platform called 'Steps & Flowers' for the older adults in the home environment, based on information and communication technology. The 'multi-dimensional interactive' design concept emphasizes on the physical interaction between older adults with the home environment and family members, rather than virtual/digital interactive modules. Artifacts which are commonly seen in the home environment are converted into interactive devices, such as 'motion sensing carpet', 'interactive flower vase', 'interactive lamp', 'interactive speaker', and 'interactive photo frame'. Through this multi-dimensional interactive platform, it is expected to 'connect' older adults with their children, family members who are not living together, and to provide sense of safety and feeling of warmth and care.
Keywords: home telehealth, older adult, multi-dimensional interactive, home environment

Lu J-M [盧俊銘], Hsu Y-L [徐業良], Chen L-K [陳亮恭], Lim C-K [林楚卿]. *Creating an interactive environment for the treatment and care for demented elderly based on mobile technologies. Journal of Gerontechnology and Service Management 2015;3(2):145-150;* doi:10.6283/JOCSG.2015.3.2.145 Dementia is characterized by decreased cognitive functions beyond normal aging, usually associated with behavioral disturbance and other mental health disorders. As getting older, the prevalence of dementia becomes higher, resulting in a huge and negative impact on personal health. In Taiwan, the prevalence of dementia among those aged 65 to 69 years is 1.2%. With every five-year increase in age, the prevalence gets twice higher. As for those who are over 90 years old, there would be one with dementia among three people. Dementia is usually not easily identifiable until it turns to be moderate or severe. After that, the support from a professional care institution becomes necessary and is of great importance. In response to this challenge, one of the most prominent trends is to embrace technologies for better dementia care. This project aims to create an interactive environment for the treatment and care of the demented elderly based on mobile technologies, which will be subsequently applied to institutional and home-based care. By further integrating the mobile technologies with social networks, their families and friends can be also included, which may contribute to an innovative model of treatment and care of the demented elderly.
Keywords: dementia, non-pharmacological interventions, mobile technology, social network

Sun T-L [孫天龍]. *Development of somatosensory game for elderly frailty assessment and training. Journal of Gerontechnology and Service Management 2015;3(2):151-160;* doi:10.6283/JOCSG.2015.3.2.151 The development of somatosensory gaming (SG) for home-based elderly frailty assessment and training, aims to motivate elderly to do the otherwise boring rehabilitation exercises. The proposed research will expand the research results from previous project from four dimensions. First, the game design will consider not only the elderly but also the evolved frailty conditions during progressive ageing. The game difficulty will be adjusted based on the progressing aging HCI principles and the green home design principles for progressing aging. Second, the frailty detection will be expanded from balance and dementia to 6 dimensions of physical frailty detection, including functional reach, reaction time, balance, slowness, and muscle endurance of lower and upper limb. Third, the somatosensory game will include 8 forms of Tai-Chi, including wave hands like clouds, part the wild horse's mane, hold a ball, single whip, repulse monkey, brush knees, fair lady works at shuttles, and grasp the peacock's tail. Fourth, the game will be integrated with wearable sensors for more



accurate frailty detection. The somatosensory gaming proposed in this research differs from other SG research or products in the market in that the game developed is not a finished product but a template that can be customized according to medical people instructions and the motor ability of the elderly players. In this project, wearable sensors will be integrated with somatosensory gaming to develop an elderly game development platform. The game will be designed considering four different progressive ageing stages, i.e., older (55-64), elderly (65-74), aged (75-84) and very old (above 85). The game design will also consider the elderly HCI principles and the green living principles. Then 6 customization templates will be developed for home-based frailty detection. Also an evaluation experiment will be conducted to examine the effectiveness of the game-based frailty detection versus standard clinical approaches. A Tai-Chi training game will then be developed for frailty reduction. Based on training goals and motor ability, a set of posture analysis rules will be developed to examine the correctness of the Tai-Chi training. Evaluation experiments will be conducted to examine the effectiveness of SG based training versus physical Tai-Chi training.

Keywords: somatosensory game, elderly frailty assessment, elderly exercise training

Wang KH-C [王熙哲]. A study on consumption value and classifying guidance for elderly people. Journal of Gerontechnology and Service Management 2015;3(2):161-164; doi:10.6283/JOCSG.2015.3.2.161 The elderly service industry is gradually becoming a potential market due to the coming of the era of aging population. In order to respond to the societal needs, understand the consumption value and needs of elderly become more and more important. Despite most current researches focus on the elderly problems such as technology, system, and policy, there are still lack multidiscipline integration researches in management, especially in consumer behavior field. Thus, the purpose of this project is to develop a consumption value model and classifying guidance for the elderly people. By using Focus Group Discussion (FGD), Analytic Hierarchy Process (AHP) and service experience need inquiry as research methods. This project argued that it should integrate the discipline of business, consumer behavior and service science, to emphasize the composite factors of consumption value of elderly and construct an innovative consumption value model and classifying guidance for elderly service industry.

Keywords: consumption value, filial piety, customer needs, home care service, elderly people

Lin P-C [林博川]. Design and implementation of an intelligent service cloud system for appliance control based on integration of senior user identification and speech dialog. Journal of Gerontechnology and Service Management 2015;3(2):165-170; doi:10.6283/JOCSG.2015.3.2.165 This project aims to develop a system which allows users to speak without using microphone to control home appliances. Users can use natural language sentences (may contain suffix words) as input for the proposed system. In the above scenario, the user does not need to know the complex control methods and related functions of each household electrical appliance. Using multidimensional space audio recording technology, results of intent recognition and speech recognition can work with coupling services. Moreover, a dialogue system can feedback a related sentence for the user to confirm the final operations of appliances. Research issues include: (1)Complete the wireless multi-channel sound catching module; (2)Complete the multidimensional audio recording with cloud computing; (3)Complete user intent recognition for cloud information appliances; (4)Complete cloud speaker recognition on cloud; (5)Complete cloud appliances operating feedback dialogue system; (6)Complete the 3D interactive virtual waiter and scene design.

Keywords: information appliance, cloud computing, virtual waiter, 3D animation design



Li C-N [李家儂], Hsieh Y-K [謝翊楷]. *Elder-friendly transit-oriented development (TOD) environment: literature review. Journal of Gerontechnology and Service Management 2015;3(2):171-188; doi:10.6283/JOCSG.2015.3.2.171* The elderly people play an important role in the society for taking care of preschool kids and passing heritage experiences on. But as technology becomes more and more advanced, the elderly have been pushed into the disadvantageous group, enjoying no comfort or convenience from the technological benefits. Meanwhile, population aging and community urbanization have been the global trend, making friendly and convenient living environment desperately desirable to make up the elderly for their inadaptability to the social changes and the inconvenience resulted from their weakened physical capabilities. As a result, simply absent is discussion on how to enhance the physical and mental health of the elderly by improving the urban conditions in response to the aging phenomena that TOD faces. For Taiwan to develop sustainable TOD urbanization, this project will be divided into 3 yearly phases to study different contents and objects, respectively. The first year is aimed to establish the evaluation indicators for a friendly TOD environment for the Taiwan elderly. To begin with, the TOD design ideas are combined with the walk needs of the elderly. The urban environments of the major five cities of Taiwan are taken as the study objects. And the Fuzzy Delphi Method (FDM) is used to define the indicators for the elderly friendliness. The features of an elderly-friendly TOD environment is then set forth in order to take the elderly people's perspectives to view their preferences for friendly transportation environments. Finally, the analytical network process (ANP) is used to set up the evaluation indicators which, hopefully, will be referenced in the future for the development of elderly-friendly TOD cities. These indicators, however, are built on an urban scale, and elements of TOD environmental impact on elderly individuals are yet to be taken into considerations. This individual observation is left to the 2nd yearly phase of the project. In the second yearly phase, the TOD factors of walk and transportation environment are studied to see their impact on the physical and mental health of the elderly. To begin with, the space syntax method is used as the foundation to take in the study result from the previous year, and the environmental features of the 104 Taipei MRT stations are added as the study objects. Through the analysis of the TOD walkway network, the indicators for TOD friendliness on elderly individuals are decided. In the analysis, the hierarchical linear modeling and structural equation modeling are used to identify the TOD walk environment factors that affect the physical and mental health of the elderly. The entire analytical process fully takes into consideration of the needs of elderly individuals. This individuality schema can be reflected in subsequent studies for TOD design in response to the population aging issues.

Keywords: the aged, friendly transport environment, transit-oriented development, land use planning, pedestrian-oriented design

Chen M-C [陳明珠], Lin CS [林清壽], Liao CK [廖崇凱]. *A study on the behavioral intention of the middle-aged people and elders purchasing commercial long-term care insurance. Journal of Gerontechnology and Service Management 2015;3(2):189-208;*

doi:10.6283/JOCSG.2015.3.2.189 It has become an important issue in Taiwan for all families that have to take care of the seniors with disability or dementia as it relates to the rapidly growing aging population and the lack of youth to care for said population. In order to understand the intention of the middle-aged and the elder people to purchase commercial long-term care insurance, we analyze studies based on the theory of planned behavior, the dimension of perceived risk, and the theory of perceived risk, to establish the research framework. People aged over 45 who live in Nantou County were the subjects in this research. A questionnaire was used to investigate the factors that affected the behavior of the middle-aged people and elders purchasing commercial long-term care insurance. The result showed that higher education levels accompanied higher



recognition of behavioral attitude, subjective norm, perceived behavioral control, and behavioral intention. The recognition of behavioral attitude and behavioral intention for purchasing commercial long-term care insurance were also higher for the wealthy. In addition, multivariate regression analysis also found that behavioral attitude, subjective norm, and perceived behavioral control would all positively affect the behavioral intention of the middle-aged people and elders in purchasing commercial long-term care insurance. Behavioral attitude and perceived behavioral control had the greatest effect. Subject norm had a significantly positive effect on behavioral intention through the mediating effect of attitude.

Keywords: theory of planned behavior, theory of perceived risk, subject norm, long-term care

Lin C-S [林清壽], Hong J-L [洪吉利]. A study on the factors affecting the behavioral intention of participating service credits bank for the middle-aged people. Journal of Gerontechnology and Service Management 2015;3(2):209-222;

doi:10.6283/JOCSSG.2015.3.2.209 The issues on the health, finance and care of the older people have obtained more attention in the aging society. Moreover, due to the growth of disabled people, the manpower demand of caregiver is greatly increasing. The concept of service credits bank system is based on the spirit of mutual help. Not only the distance between middle-aged and older people can be shortened, but also the problem of caregiver manpower can be solved through serving as volunteers. From the process of mutual help, the middle-aged and older people can affirm their life meaning and value. In addition, they can achieve the goal of successful aging. In order to understand the behavioral intention of participating service credit bank system for middle-aged and older people, the study combined the theory of planned behavior with "Social Responsibility" to build the research framework. The subjects of this study were people aged over 45 years old who lives in Nantou County. The questionnaire survey was used to investigate the influencing factor of behavioral intention of participating service credit bank system for middle-aged and older people. The results showed that the female, participated volunteers and wealthier people had more recognition of 'participate attitude', 'subjective norm', 'perceived behavioral control', 'social responsibility' and 'behavioral intention' on participating in service credits bank system. The better educational background is, the more recognition of 'participate attitude', 'subjective norm' and 'perceived behavioral control' of participating service credit bank system they have. Besides, the multiple regression analysis showed that 'participate attitude', 'subjective norm', 'perceived behavioral control' and 'social responsibility' were positively affect the behavioral intention of participating service credit bank system. Among them, 'perceived behavioral control' and 'social responsibility' were the most important influencing factors.

Keywords: service credits bank, theory of planned behavior, social responsibility

Lu L-S [盧麗淑], Ho Y-F [何于凡]. A study on the behavior and emotion of the active aging groups' ecotourism travel experience: needs survey on the use of interactive technology. Journal of Gerontechnology and Service Management 2015;3(2):223-234;

doi:10.6283/JOCSSG.2015.3.2.223 This paper presents a study on the behavior and emotion of the active aging groups' ecotourism travel experience, in order to survey the needs on the use of interactive technology. In the first stage, behavioral observation with active aging people in two different ecotourism environments was conducted. In the second stage, four active older adults and two professional tour guides were invited for in-depth interview to find out the problems and demands which may happen in active aging groups' ecotourism travel. The results show that, factors forming the active aging groups' eco-tourism travel experience include external environment, physiological and psychological factors. In particular, external environment is an important medium to enhance older adults' satisfaction, including the experience of five senses, accompanying



emotion and nostalgia experience, as well as daily life stories, new knowledge obtaining and sharing mechanism. Results of this study can be applied to shape the scenario design of future ecotourism, to help develop services and related technology products in order to enhance the joy and experience of older adults in ecotourism.

Keywords: active aging, ecotourism, travel experience, behavior and emotion

Kuo C-P [郭金佩], Huang H-P [黃慧萍], Hsu M-Y [許美雲], Chien L-N [簡莉娜], Tsai P-L [蔡碧藍]. Design of the "4-in-1 pain roller". *Journal of Gerontechnology and Service Management* 2015;3(2):235-242; doi:10.6283/JOCSSG.2015.3.2.235 The occurrence of musculoskeletal ache may lead to fatigue, inattention, poor quality of sleep, efficiency of work and quality of life. Taiwanese spend approximately over 100 billion dollars on pain management. More than a half of people do not ask for help from physicians, but would like to use plasters or other equipment. Therefore, it is critical to develop a pain-curing equipment with multiple functions. Through the analysis of all types of pain-curing equipment and interview with 100 nurses, technological staffs, and elders, using a self-report questionnaires of neck-shoulder pain, the result indicates that the single functions, expensive, heavy body, and hard to accurately use are the disadvantage of current pain curing equipment. The 'four-in-one pain roller' was developed based on the measurement of human anatomy. The roller can be adjusted to the different angles of the human body, so the plaster or ointment can be applied on the area precisely. The roller can be also used for massage and scratching.

Keywords: muscle skeleton ache, neck-shoulder pain, elderly

Yu M-H [于孟弘], Lu L-S [盧麗淑], Chang W-S [張文山]. A study of applying augmented reality on active aging ecotourism by interpretive signs in mock contextual. *Journal of Gerontechnology and Service Management* 2015;3(2):243-254;

doi:10.6283/JOCSSG.2015.3.2.243 The project aims on studying the concept of augmented reality that applies on ecotourism of the active aging group by interpretive signs. The objectives are to understand the demand of carrying along technological products by the active aging group during ecotourism, and to raise the concept of augmented reality and apply to a mock contextual on interpretive signs in ecotourism of the active aging group. The procedure of the study is divided into two parts: (1) By undercover observation and interviews as well as workshops participation, the demand of carrying technological products by the active aging group in ecotourism can be figured out. (2) Build up prototypes of interpretive signs with augmented reality applied along with an evaluation of usage, the result will be stimulated to the mock contextual. Results showed that the variety of technological products carried includes: smart phones, non-smart phones, digital cameras and tablets, etc. Demands include: (1) the demand of recording; (2) the demand of safety; (3) the demand of knowledge; (4) the demand of convenience; (5) the demand of sharing. According to the analysis on demands and evaluation on usage, the application of augmented reality on interpretive signs in ecotourism of active aging group is raised. The procedures are listed as below:(1) loading of the augmented reality system; (2) integration of mobile devices and interpretive signs; (3) contents of the augmented reality system; (4) sharing experience. The mock contextual foresees to enhance the experience of active aging group during ecotourism and an improvement of transforming aging group into active and optimistic ones is sincerely expected.

Keywords: augmented reality, active aging, ecotourism, interpretive sign

Yeh-Liang Hsu [徐業良] PhD, editor of the Journal of Gerontechnology and Service Management

E: mehsu@saturn.yzu.edu.tw

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