Smart Home: Improving Quality Living of Elderly

SIRF 2020

Tackling Double Ageing by Double Smart
以雙智慧應對雙老化

SOCIAL INNOVATION REGIONAL FORUM
社會創新區域論壇
2020

Thematic sessions 專題研討

What are the best smart living technologies to be placed at home for the elderly?

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Sustainable Use of Air Conditioning using IoT technologies for Energy Saving and Smart Living

Open Heart

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Feature Paper

Tackling Double-ageing with Double-smart

K.K. Ling and Karen Lee

K.K. Ling is the former President of HKIP (2007-2009) and former Director of Planning (2012-2016). He is now the Director of Jockey Club Design Institute for Social Innovation and Professor of Practice (Planning) of The Hong Kong Polytechnic University. He is also the Adjunct Professor of The University of Hong Kong and The Chinese University of Hong Kong.

Karen Lee is the Project Manager II (Special) of the Jockey Club Design Institute for Social Innovation of The Hong Kong Polytechnic University. She is a chartered town planner and project manager specialising in urban integration and city management strategies.

Keywords: population ageing, building stock ageing, technology, smart city, smart ageing, double-ageing, double-smart, smart city governance, smart neighbourhood, smart community, planning standard, guidelines, HKPSG, age-friendly city, ageing-in-place, urban integration, city management, urban design

Introduction

Population ageing and building stock ageing are usually tackled as two separate subjects and each has already received much attention. However, the Hong Kong community at large is less aware that the combined impact of population ageing and building ageing, i.e. "double ageing", is a much more complex issue to address. If not tackled properly and in a timely manner, "double ageing" as a socio-economic issue will have significant impact on the sustainable development of Hong Kong, significantly affecting the liveability and resilience of the city.

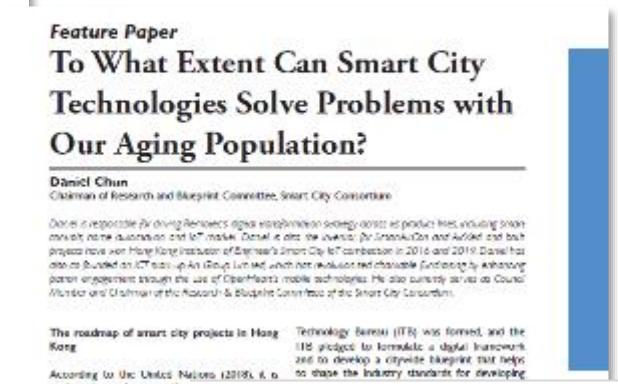
A strategic policy framework to tackle the complex issue of double-ageing is still lacking. The first objective of this paper is to elaborate on the problems and evaluate existing efforts in tackling the challenge. As problem identifiers and solution advocates for the city, town planners ought to articulate the socio-economic challenges of double-ageing in the strategic policy agenda and play a facilitating role in coordinating interdisciplinary efforts to tackle the issue. This paper advocates an integrated, people-centric "double-smart" approach to leverage the merits of smart ageing and smart city in tackling double-ageing and bring positive changes for the city.

Double-ageing: the unique challenge for Hong Kong

Population ageing

Double-ageing is an issue forewarned in the latest version of strategic plan of Hong Kong, "HK2030+: Towards a Planning Vision and Strategy Transcending 2030" (HK2030+). As a population with the highest life expectancy in the world, Hong Kong's population is ageing amongst the fastest of all economies (Elderly Commission, 2017). The increase in life expectancy means that bulge of the largest age cohort at present, 50-54 year olds, is projected to move upwards to 80-84 by 2044 (see Figure 1).

According to 2015-2064 population projections, Hong Kong's elderly population (65+) will increase from 15.3% of the total population (1.12 million people) in 2015 to 30.6% (2.51 million) in 2043 and 35.9% (2.58 million) in 2064 respectively, putting massive pressure on the already gridlocked medical, social welfare and elderly support services system. If we take 85+ as the benchmark that a certain degree of caring services is almost unavoidable, the cohort would increase almost five-fold from 2.2% in 2014 to 10.1% in 2064. Society at present tend to focus resources on addressing the needs of the elderly



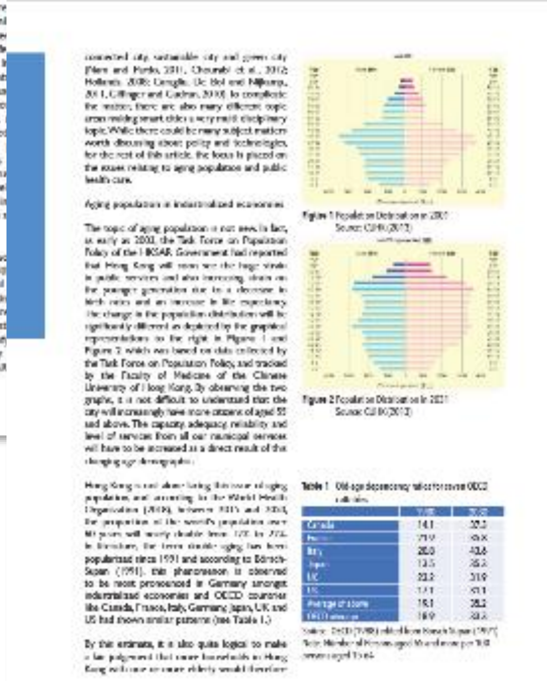
Feature Paper

To What Extent Can Smart City Technologies Solve Problems with Our Aging Population?

Daniel Chun
Chairman of Research and Blueprint Committee, Smart City Consortium

The roadmap of smart city projects in Hong Kong

Technology Bureau (ITB) was formed, and the ITB pledged to formulate a digital framework and to develop a citywide blueprint that helps to shape the industry standards for developing



require some form of medical or health-related caregiving. The demand for public health care services from the Hospital Authority (HA) will also be increased as a result. Fiscal support for such will also have to be increased. It is already been widely discussed recently at the HKSAR Legislative Council and at various committees that hospital support staff and trained medical practitioners are overworked (SCMP, 2019) and this may compromise the quality of services being delivered.

What could the smart city technology roadmap help in public healthcare?

Source of photo and credit: Pixabay

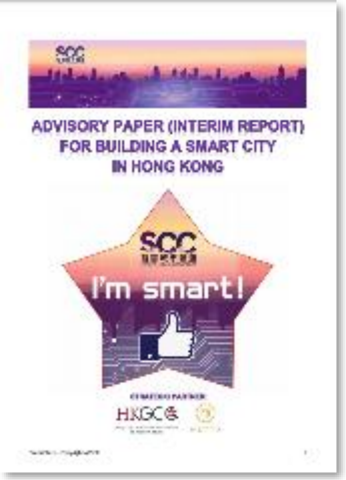
So, if humanoid robots are not entirely ready to replace the tender loving care offered by healthcare workers (Locsin and Ito, 2018) as yet, does it necessarily mean that the ontology (nature) and epistemology (practice) of healthcare could not be re-engineered and reprioritized with appropriate technology enhancement to provide predictive and preventive healthcare. In light of this argument, we are in the opinion that healthcare workers and their professional practice could be greatly enhanced with the application of appropriate sensors and big data analytic network, a fiscal policy and a holistic strategy that supports the concept of smart living and healthy environment.

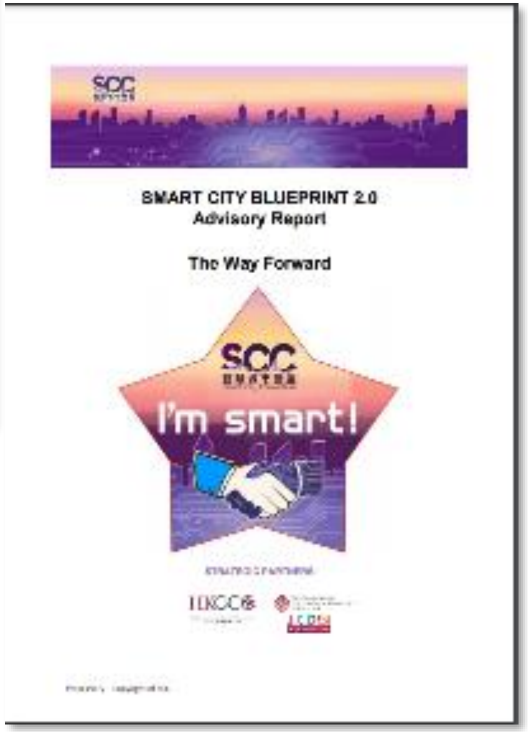
> *"Aging with dignity is mere fantasy of most senior citizens."*

In 2015, Hong Kong had 1.12 mil people aged over 65, 15% of which were over 85. The trend of the aging population is getting steeper as baby boomers reach their retirement age. By 2040, one in every three people in Hong Kong will be over 65 (Legco, 2015). Currently, there is a queue of 32,000 elderly citizens waiting for nursing homes. And equally alarming is that there are over 18,000 new cases of elderly citizens diagnosed with dementia each year. Our current senior care and healthcare systems have been placed under an unprecedented amount of pressure. Meanwhile, aging with dignity is mere fantasy of most senior citizens. In order to facilitate healthy aging in Hong Kong, there are opportunities now to create and foster a Proactive, Predictive and Preventative living environment supported by a holistic smart health system that links up families, neighbors, caregivers and doctors together, to keep our elderly citizen safe, healthy and happy at home. By adopting these three pillars, this could improve our elderly citizen's wellbeing while distributing resources equitably to those in need.

The following three pillars are part of our recommendations which were also presented in the Smart City Consortium's Interim Advisory Report for Hong Kong's Smart City Blueprint (SCC, 2016):

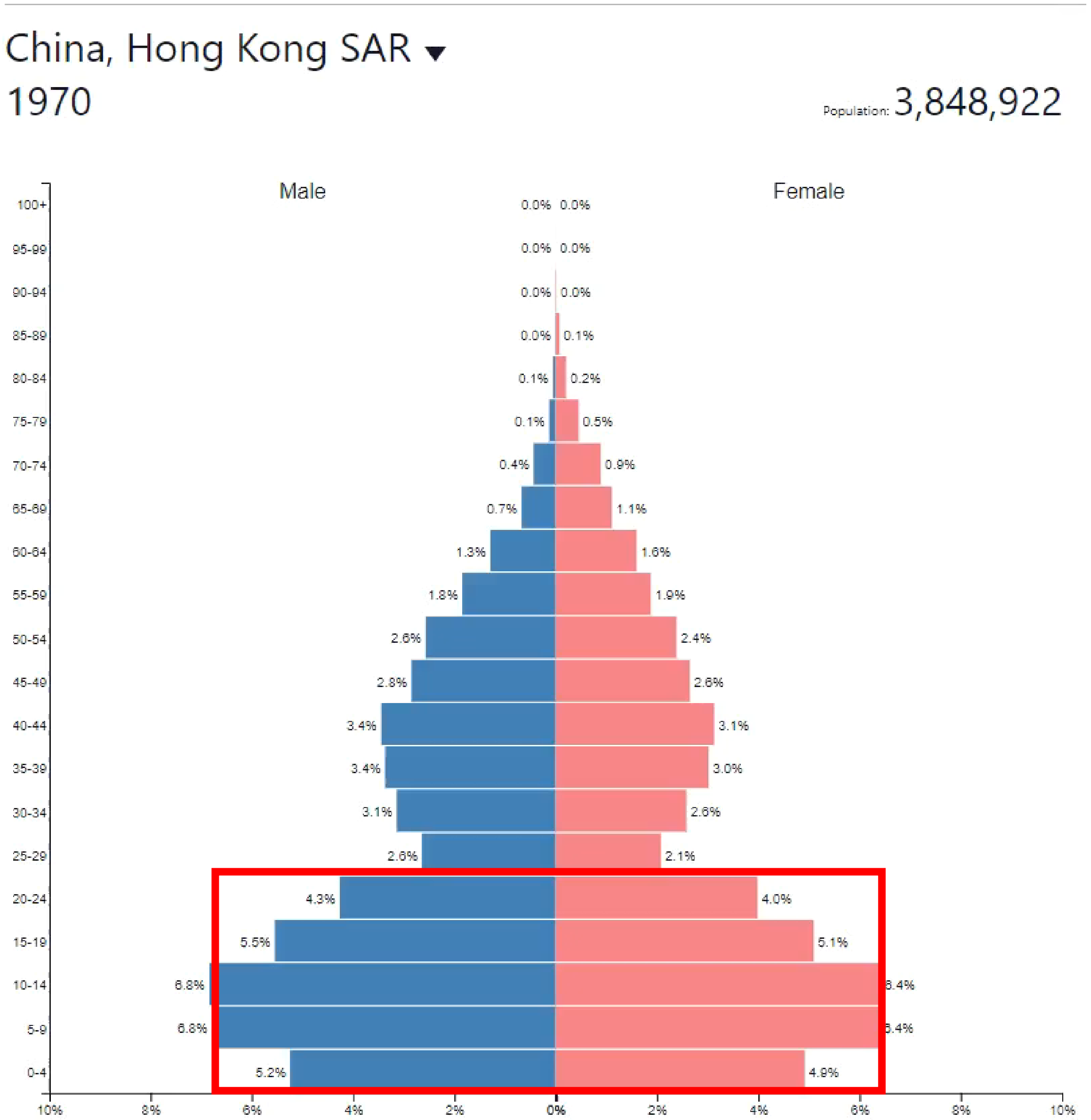
i) Proactive Smart Health Monitoring - An indoor and outdoor smart Internet of Things





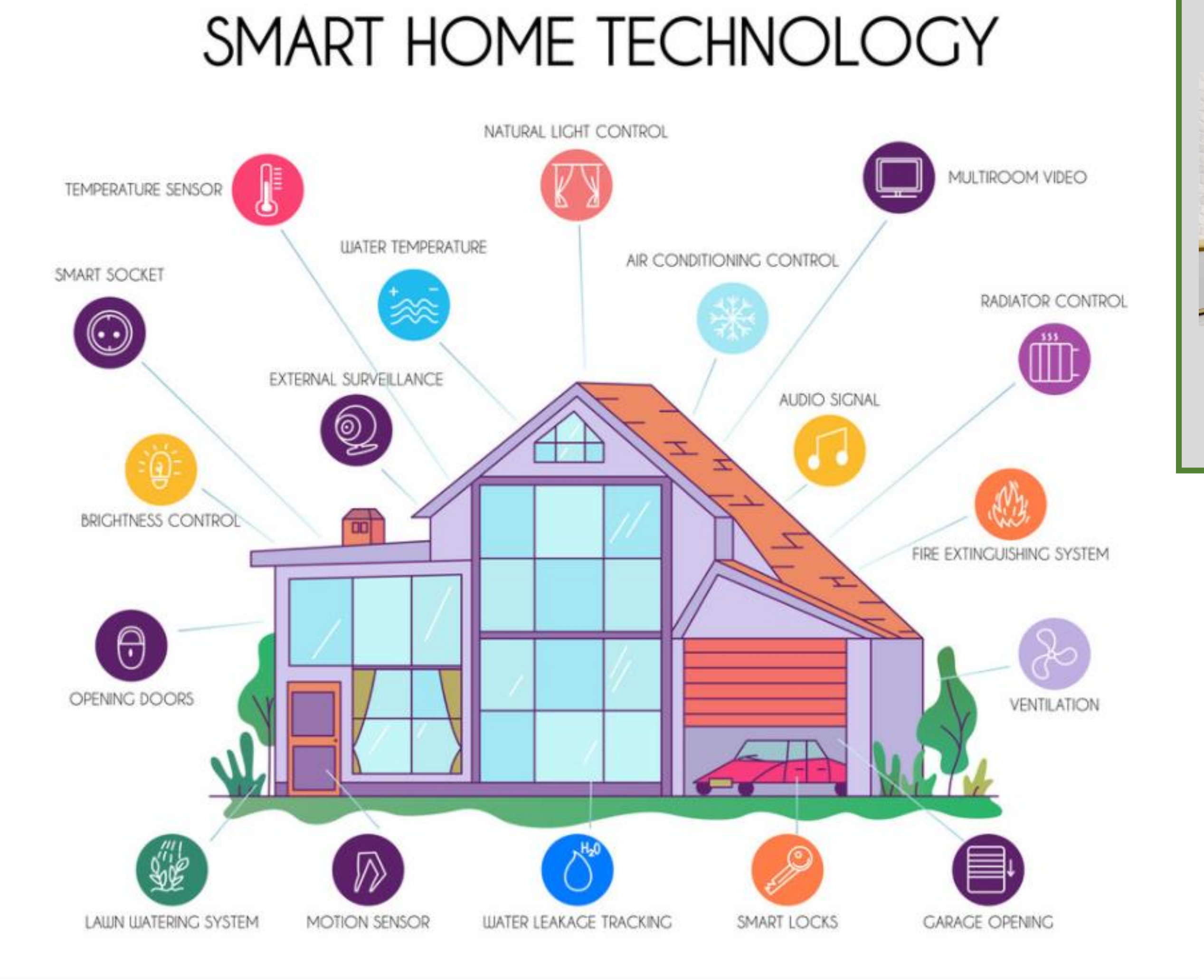
https://smartcity.org.hk/en/info-research.php

Blueprint Advisory Report(s)
2016, 2017, 2020



https://www.populationpyramid.net/china-hong-kong-sar/2045/

Value propositions & promises of Smart Home Technologies



Comfort Convenience Control (3Cs)

Safety and Prevention (SP)

Safety and Prevention (SP)

Hong Kong Housing Society has deployed the use of some sensors for detection

SCA Training Seminar
Sep 29, 2020

Source: Hong Kong Housing Society website

47% of the fall is indoor and 66% is within home environment

- For the over-65 population, falling can be a serious health risk. One in four older adults falls each year; but less than half tell their doctor. Falling once doubles your chances of falling again.
- In Hong Kong, each year 25% of community dwelling elders suffer from fall. 75% of them get injury include head injury and fracture. Elders who fell in the past six months had shown to have increased risk of fall in near future.
- Elderly Commission Dept of Health in Hong Kong also has similar warnings for elderly fall-related hazards.

Chu, L. W., Chiu, A. Y., & Chi, I. (2008). Falls and subsequent health service utilization in community-dwelling Chinese older adults. Archives of gerontology and geriatrics, 46(2), 125-135.

Chu, L. W., Chiu, A. Y., & Chi, I. (2007) Falls and fall-related injuries in community-dwelling elderly persons in Hong Kong: a study on risk factors, functional decline, and health services utilisation after falls Hong Kong Med Journal 2007; 13(Suppl 1):S8-12

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Hong Kong Journal of Occupational Therapy (2011) 21, 33–40

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ORIGINAL RESEARCH

Falls Among the Community-living Elderly People in Hong Kong: A Retrospective Study

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KEYWORDS
Accidental falls;
Community-living elderly;
Retrospective study

Abstract
Purpose: To examine the base rate of falls for a group
Hong Kong.
Methods: This was a retrospective cross-sectional study
above living in various geographical regions of Hong Ko
a community centre over a period of 4 months. Partic
sampling and stratified by age range according to the dis
were asked to report on their fall history for a period of
Results: Of all the participants, 111 reported having fall
fall rate was 29%, and the 1-year prevalence of falls wa
falls. Of all the falls, 47.7% occurred indoors whereas 52
female gender, Timed Up & Go Test, self-reported hist
four or more types of medication, receiving rehabilitatio
were independent predictors for fallers with at least on
ences between the number of near-miss experienced
12 months.
Conclusion: We determined the base rate of falls for a g
of Hong Kong. Retrospective methods, which ask elderl
their falls, may be used to identify risks preceding falls

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doi:10.1016/j.hkjot.2011.05.005

Table 1 *(continued)*

Characteristics	All participants (*N* = 554)
Part-time domestic helper	8 (1.4)
Family members	47 (8.5)
Others	3 (0.5)
Dependency for heavy household duties	
Take care of own self	228 (41.1)
By couple	53 (9.5)
Full-time domestic helper	36 (6.5)
Part-time domestic helper	63 (11.4)
Family members	135 (24.4)
Others	39 (7.0)
Mobility aid	
None	406 (73.2)
Walking stick/umbrella	135 (26.0)
Quadripod	1 (0.2)
Walking frame	3 (0.5)
Mobility status	
Assistance indoor	3 (0.6)
Supervision indoor	2 (0.4)
Supervision outdoor	8 (1.4)
Independent outdoor	541 (97.5)
TUGT	14.5 ± 4.5
FRT (cm)	24.5 ± 6.2
BMI	24.3 ± 3.6
AMT	8.7 ± 1.6
Visual acuity (Left)	5.5 ± 1.8
Visual acuity (right)	5.7 ± 1.6
Presence of chronic diseases	
Yes	446 (80.4)
No	108 (19.5)
Comorbidities	
Stroke	29 (5.2)
Dementia	1 (0.2)
Osteoporosis	27 (4.9)
Arthritis	76 (13.7)
Parkinson's disease	1 (0.2)
High blood pressure	278 (50.1)
Low blood pressure	9 (1.6)
Diabetes mellitus	101 (18.2)
Eye disease	93 (16.8)
Chronic chest disease	12 (2.2)
Cardiac disease	60 (10.8)
Depression	9 (1.6)
Cancer	9 (1.6)
Previous upper limb fracture	8 (1.4)
Previous lower limb fracture	11 (2.0)
Low back pain	8 (1.4)
Number of drugs taken	
Nil	153 (27.6)
1–3 kinds	371 (66.8)
≥4 kinds	30 (5.4)
Receiving social services	
Day activity centre	2 (0.4)
Elderly centre	462 (83.2)
Enhanced home care service	36 (6.5)
Receiving medical service	427 (76.9)
Receiving active rehabilitation service	10 (1.8)

Table 1 *(continued)*

Characteristics	All participants (*N* = 554)
Incidence of falls within 1 y	
Yes	111 (20.0)
No	443 (80.0)

Note. AMT = Abbreviated Mental Test; BMI = body mass index; FRT = Forward Reaching Test; TUGT = Timed Up & Go test. Values are shown as number (%); means are presented as the mean ± standard deviation.

living environments was similar to that of the study population with 39.5% lived in public housing estates and 35.8% in private housing (including 12.3% in housing of housing ownership scheme). Of all the falls, 47.7% occurred at home or within buildings/housing estates and 52.3% outdoors; most (79.9%) occurred during daytime. Most indoor falls happened in dining areas (17%) and at lifts and lobbies (9%). Of all the fallers, 36.9% perceived environmental factors as the cause of the fall, 39.6% perceived personal or behavioural factors as the major cause, and 12.6% perceived their falls resulting from both environmental and personal reasons.

Table 3 shows the results of a comparison of demographic and functional parameters in fallers and nonfallers. Significant differences were found between both groups in terms of gender ($p = .008$), drug intake ($p = .019$), use of walking aids ($p = .001$), histories of chronic diseases ($p = .021$), previous upper limb fracture, ($p = .003$), and performance on the TUGT ($p = .001$). It was interesting to find out that the number of near-miss experienced by fallers and nonfallers in the past 12 months was similar and there were no significant differences between them ($p = .902$).

Table 4 lists the results of logistic forward regression analysis of demographic and functional parameters for one or more falls ($N = 554$). This logistic regression analysis showed that female gender (odds ratio [OR] = 2.54), TUGT (OR = 1.07), self-reported history of upper limb fracture in the preceding 12 months (OR = 9.36), taking four or more drugs (OR = 3.17), receiving rehabilitation services (OR = 3.68), and living as a couple (OR = 2.06) were significant predictors for whether the participant had at least one fall in the previous 12 months.

Table 5 summarizes the results of logistic regression analysis of demographic and functional parameters for two or more falls. History of stroke (OR = 3.73), depression (OR = 8.53), previous upper limb fracture (OR = 6.68), and those receiving rehabilitation services (OR = 5.01) were significant predictors of two or more falls.

Discussion

The estimates for fall rate and prevalence in our study are similar to the results of a previous falls survey in Hong Kong using prospective methods (Chu et al., 2007). We found that the retrospective method—asking elderly people living in a community to recall their falls during the preceding

Table 2 Characteristics of Fallers.

Characteristics	Fallers (*N* = 111)
Living environment	111 (100.0)
Public housing estate	46 (41.4)
Housing ownership scheme	18 (16.2)
Private housing	20 (18.0)
Rented room	0 (0)
Senior citizen hostel	8 (14.4)
Squatter hut/Temporary house	16 (14.4)
Others	3 (2.7)
No. of falls within 1 y	111 (100.0)
1	76 (13.7)
2	24 (4.3)
3	8 (1.4)
4	1 (0.2)
>5	2 (0.4)
Site of falls	111 (100.0)
Indoor	53 (47.7)
Outdoor	58 (52.3)
Environments of indoor falls	53 (47.7)
Dining area	19 (17.0)
Bedroom	3 (2.7)
Kitchen	7 (6.3)
Bathroom/toilet	6 (5.4)
Main flat entrance	2 (1.8)
Public area (within apartment)	4 (3.6)
Public area (within housing estate)	10 (9.0)
Others	2 (1.8)
Activity participation during indoor falls	53 (47.7)
Toileting	1 (0.9)
Dressing	0 (0)
Bathing	2 (1.8)
Changing position/transfer	8 (7.2)
Food preparation	4 (3.6)
Household tasks (other than food preparation)	4 (3.6)
Going in/out	5 (4.5)
Sleep	3 (2.7)
Cannot identify	13 (11.7)
Cannot recall	4 (3.6)
Time of falls	111 (100.0)
Daytime (6:01 AM to 6:00 PM)	88 (79.9)
Evening (6:01–12:00 PM)	20 (18.0)
Midnight (12:01–6:00 AM)	3 (2.7)
Medical consultation after falls	111 (100.0)
Yes	10 (9.0)
No	101 (91)
Self-perceived reasons of falls	111 (100.0)
Environmental factor	41 (36.9)
Personal/behavioral factor	44 (39.6)
Both environmental & behavioral factors	14 (12.6)
Unlucky or no specific reason	12 (10.8)

Values are shown as number (%).

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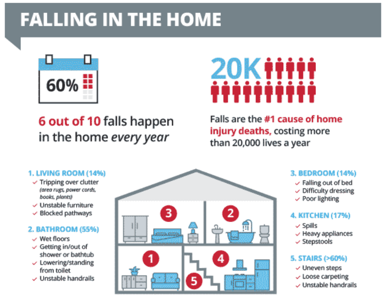
Sample Size
n=111

47% indoor

66% within home

34% outside home
(within the estate)



Fong, K. N., Siu, A. M., Yeung, K. A., Cheung, S. W., & Chan, C. C. (2011). Falls among the community-living elderly people in Hong Kong: a retrospective study. Hong Kong Journal of Occupational Therapy, 21(1), 33-40.

Assisted Living technologies

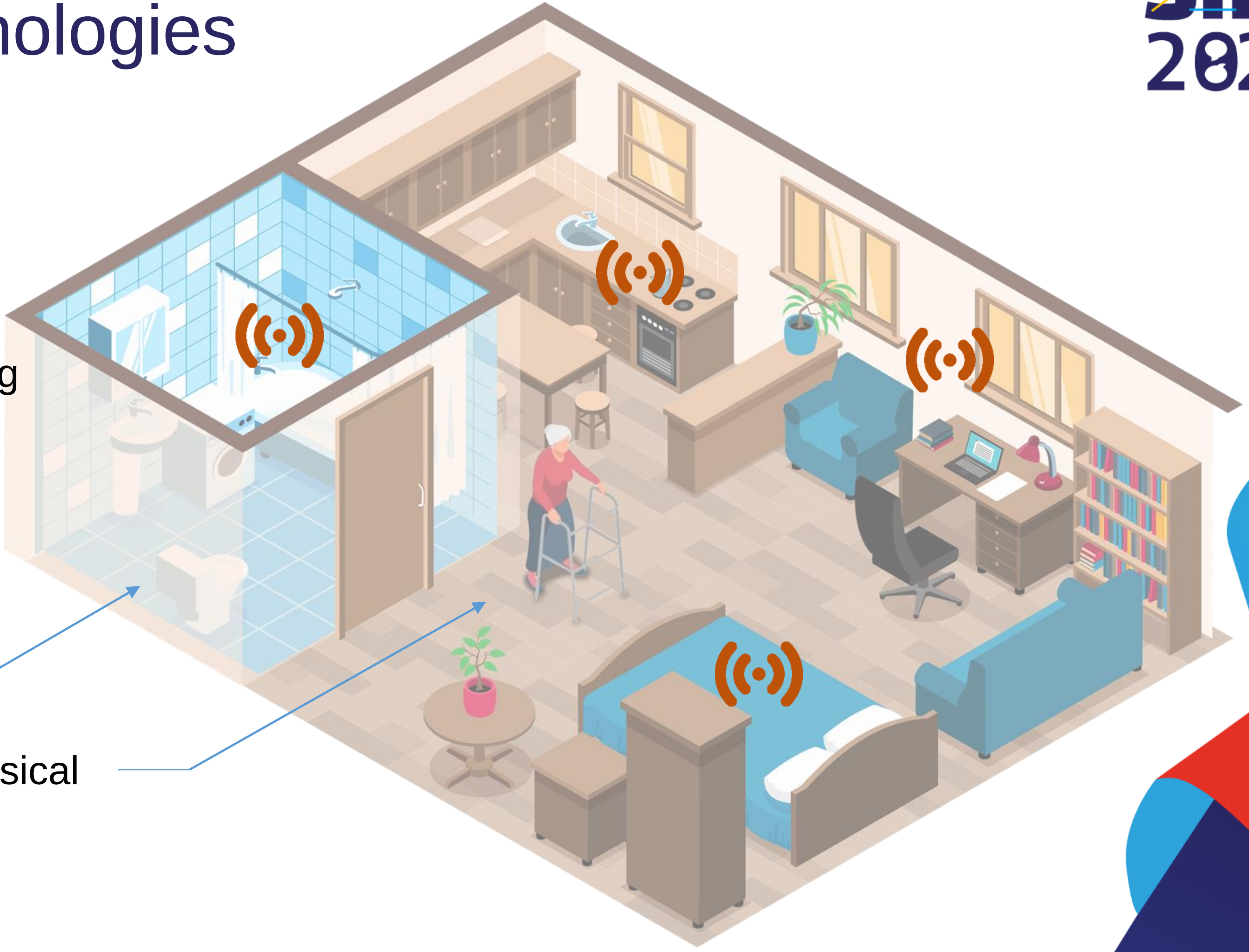
Unobtrusive radar sensors, a Wi-Fi network, a gateway and simple audio and/or video communication.

Uses data modeling, machine learning and A.I to predict anomalies

Emergency alert for care staff

Complete respect of privacy

Understanding the behaviour and physical activities of the elderly occupants



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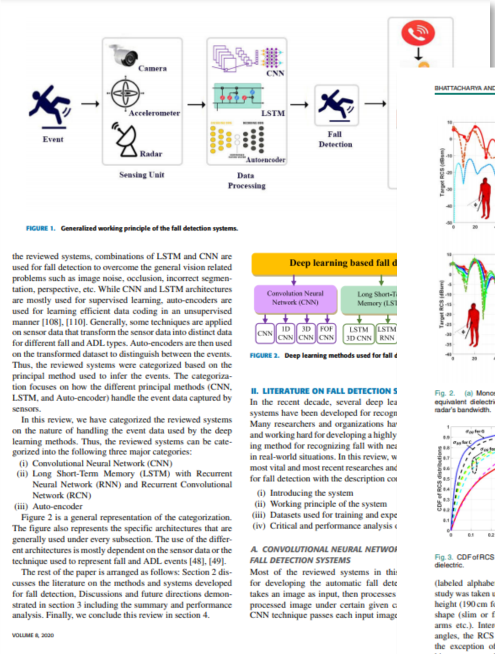
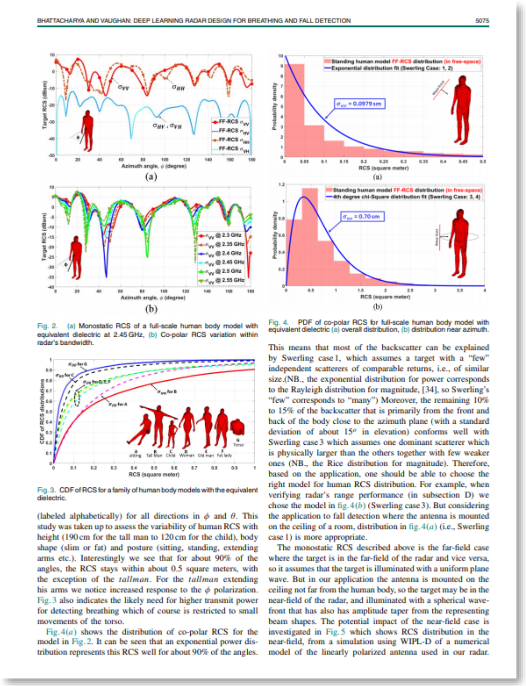
Radar Sensors

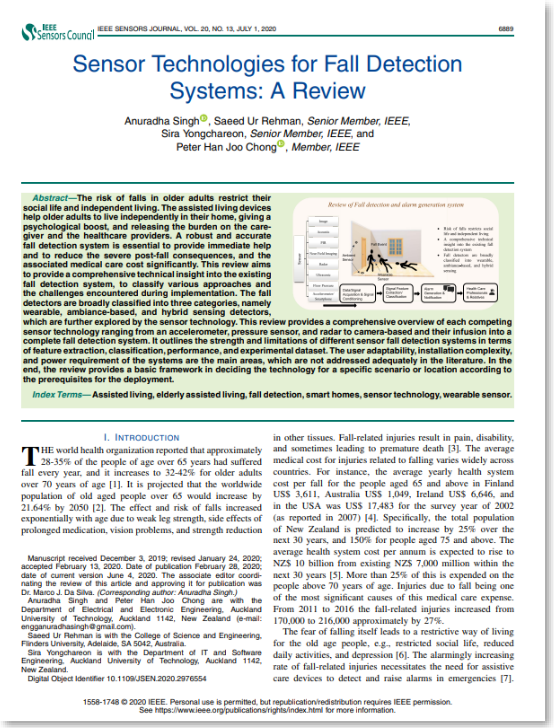
An alternative to cameras and other wearable sensors


Deep Learning Radar Design for Breathing and Fall Detection

Abhijit Bhattacharya, Student Member, IEEE, and Rodney Vaughan, Life Fellow, IEEE






Sensor Technologies for Fall Detection Systems: A Review

Anuradha Singh, Saeed Ur Rehman, Senior Member, IEEE, Sira Yongchareon, Senior Member, IEEE, and Peter Han Joo Chong, Member, IEEE

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Singh, A., Rehman, S. U., Yongchareon, S., & Chong, P. H. J. (2020). Sensor Technologies for Fall Detection Systems: A Review. *IEEE Sensors Journal*, *20*(13), 6889-6919.

Radar Sensors

is about collecting behaviour data for modelling, predictive analysis

biosensors MDPI

Article

A Radar-Based Smart Sensor for Unobtrusive Elderly Monitoring in Ambient Assisted Living Applications

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Abstract: Continuous in-home monitoring of older adults living alone aims to improve their quality of life and independence, by detecting early signs of illness and functional decline or emergency conditions. To meet requirements for technology acceptance by seniors (unobtrusiveness, non-intrusiveness, and privacy-preservation), this study presents and discusses a new smart sensor system for the detection of abnormalities during daily activities, based on ultra-wideband radar providing rich, not privacy-sensitive, information useful for sensing both cardiorespiratory and body movements, regardless of ambient lighting conditions and physical obstructions (through-wall sensing). The radar sensing is a very promising technology, enabling the measurement of vital signs and body movements at a distance, and thus meeting both requirements of unobtrusiveness and accuracy. In particular, impulse-radio ultra-wideband radar has attracted considerable attention in recent years thanks to many properties that make it useful for assisted living purposes. The proposed sensing system, evaluated in meaningful assisted living scenarios by involving 30 participants, exhibited the ability to detect vital signs, to discriminate among dangerous situations and activities of daily living, and to accommodate individual physical characteristics and habits. The reported results show that vital signs can be detected also while carrying out daily activities or after a fall event (post-fall phase), with accuracy varying according to the level of movements, reaching up to 95% and 91% in detecting respiration and heart rates, respectively. Similarly, good results were achieved in fall detection by using the micro-motion signature and unsupervised learning, with sensitivity and specificity greater than 97% and 90%, respectively.

Keywords: fall detection; vital signs monitoring; heart rate; respiration rate; ultra-wideband radar; micro-Doppler; supervised; unsupervised

1. Introduction

The population aged 65 and over, which is the fastest growing sector in developed countries [1], suffers from the highest morbidity and mortality rates due to age-related disorders (e.g., illness and functional decline) [2] and injury-related conditions (e.g., trauma and fractures) [3,4]. In this context, it is paramount to monitor older adults in their own homes, but it becomes challenging when family members or caregivers cannot be always available. Consequently, during the last years, the demand for unobtrusive sensing of human activities and behaviors as well as physiological parameters has increased notably in the ambient assisted living (AAL) domain. Indeed, automated sensor systems can help by continuously monitoring elderly for detection of dangerous situations and even for early prediction of health disorders, in order to provide timely medical assistance and alerts to caregivers.

Most of the current elderly monitoring systems are aimed to monitor activities [5] and vital signs [6] of elderly in their daily life for the automated detection of abnormal events, among which falls are without doubt one of the major healthcare concerns [7]. In fact, as some studies pointed out [8–10],

"Continuous in-home monitoring of older adults living alone aims to improve their quality of life and independence, by detecting early signs of illness and functional decline or emergency conditions."

"The reported results show that vital signs can be detected also while carrying out daily activities or after a fall event with accuracy varying according to the level of movements, reaching up to 95% and 91% in detecting respiration and heart rates, respectively. Similarly, good results were achieved in fall detection by using the micro-motion signature and unsupervised learning, with sensitivity and specificity greater than 97% and 90%, respectively."

Diraco, G., Leone, A., & Siciliano, P. (2017). A radar-based smart sensor for unobtrusive elderly monitoring in ambient assisted living applications. Biosensors, 7(4), 55.

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Smart Home - Use of sensors for safety

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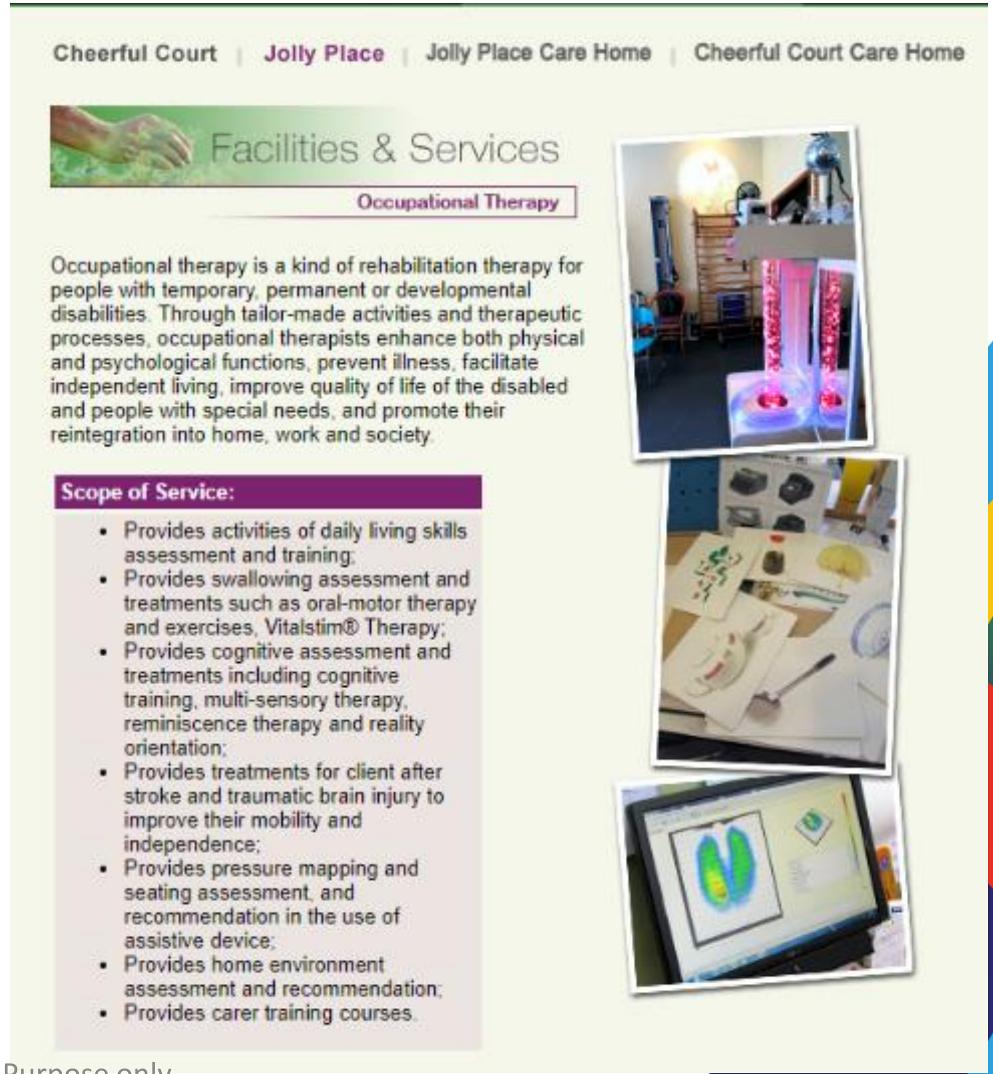

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Perfect use cases scenario to use the technologies to collect data about the elderly's daily activities

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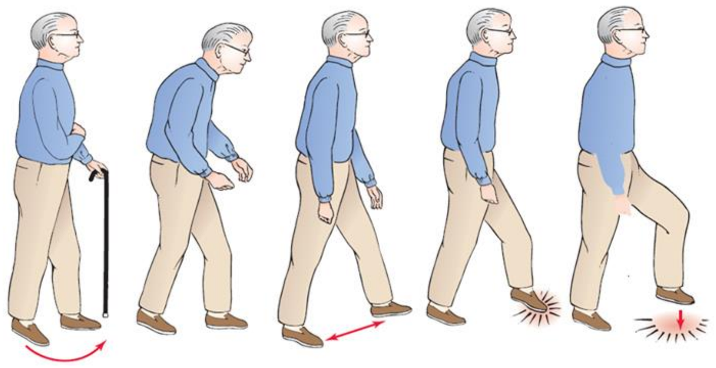
- Home care support system
- Anti-wandering systems with RFiD
- Health Monitoring System – data are collected daily
- Entrance Door / Non-motion response detection system
- Emergency Call system

3 major reasons why these data should be captured by unintrusive radar sensor technologies

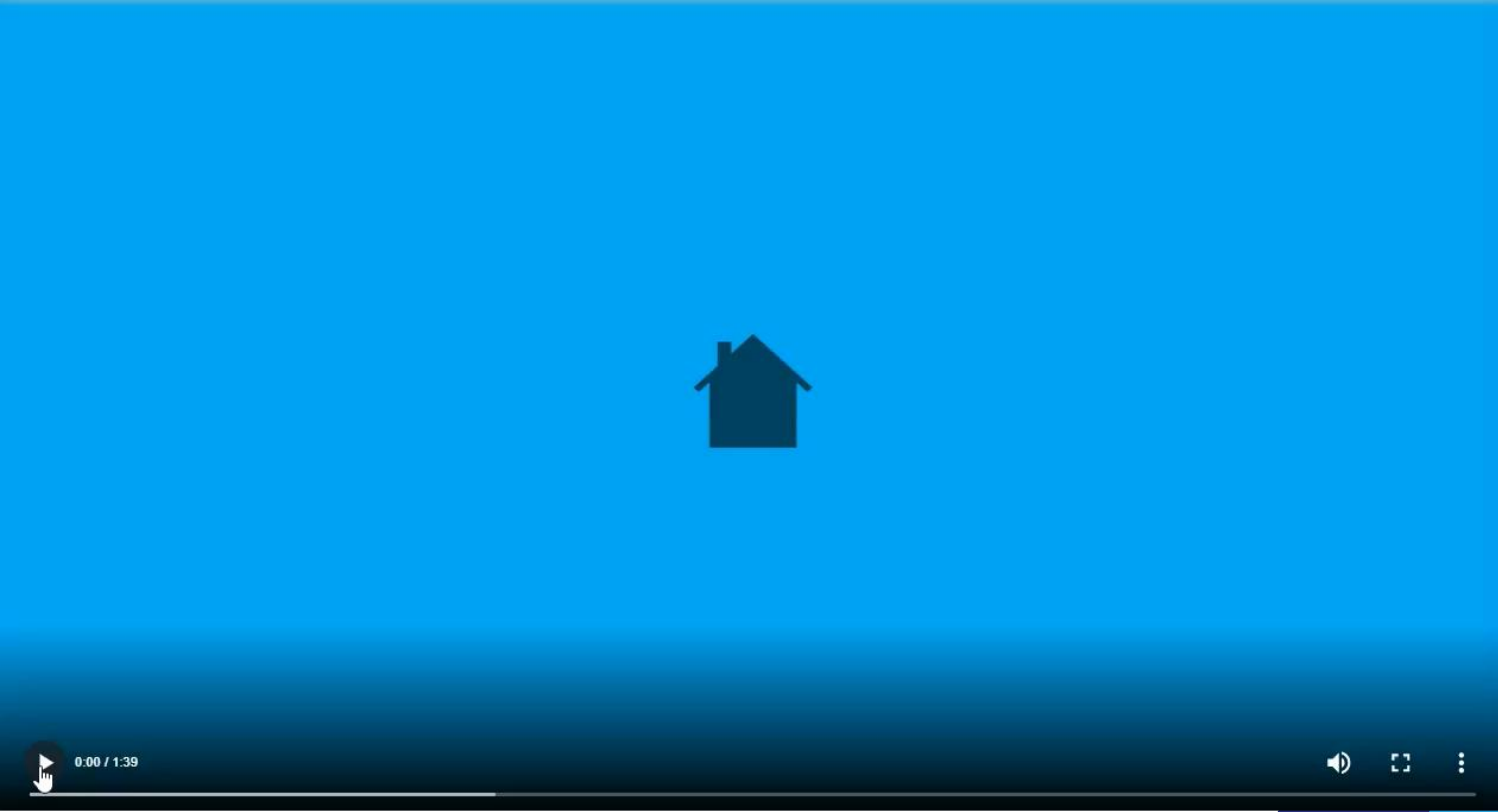
Capture data such as unreported falls and near-falls



Capture data to determine upright gait stability

https://braceworks.ca/2019/07/24/health-tech/gait-and-balance-dysfunction-in-older-adults-challenges-and-interventions/

Capture data to analyse sleep patterns, activity levels, frequency, mobility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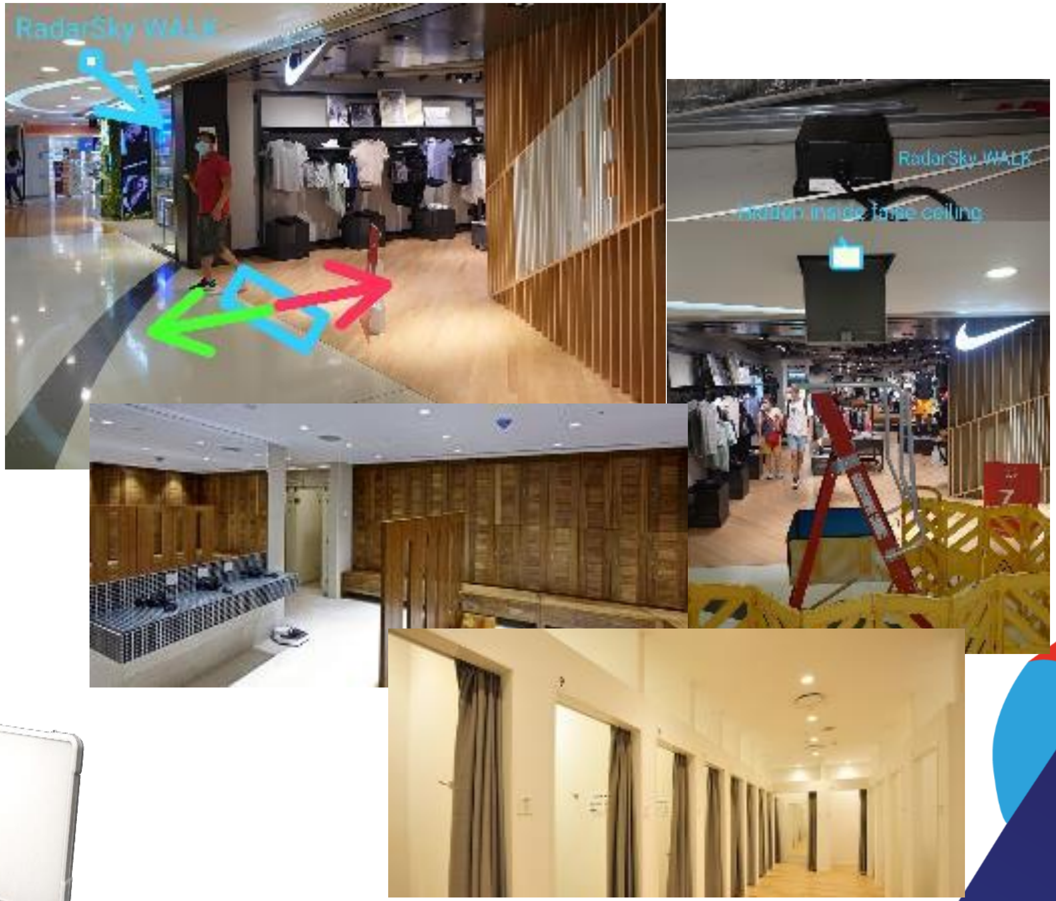
Radar for tracking people and presence

- MIoT Ltd - a start-up from HKSTP had shipped various IoT radar solutions in Hong Kong and Shanghai

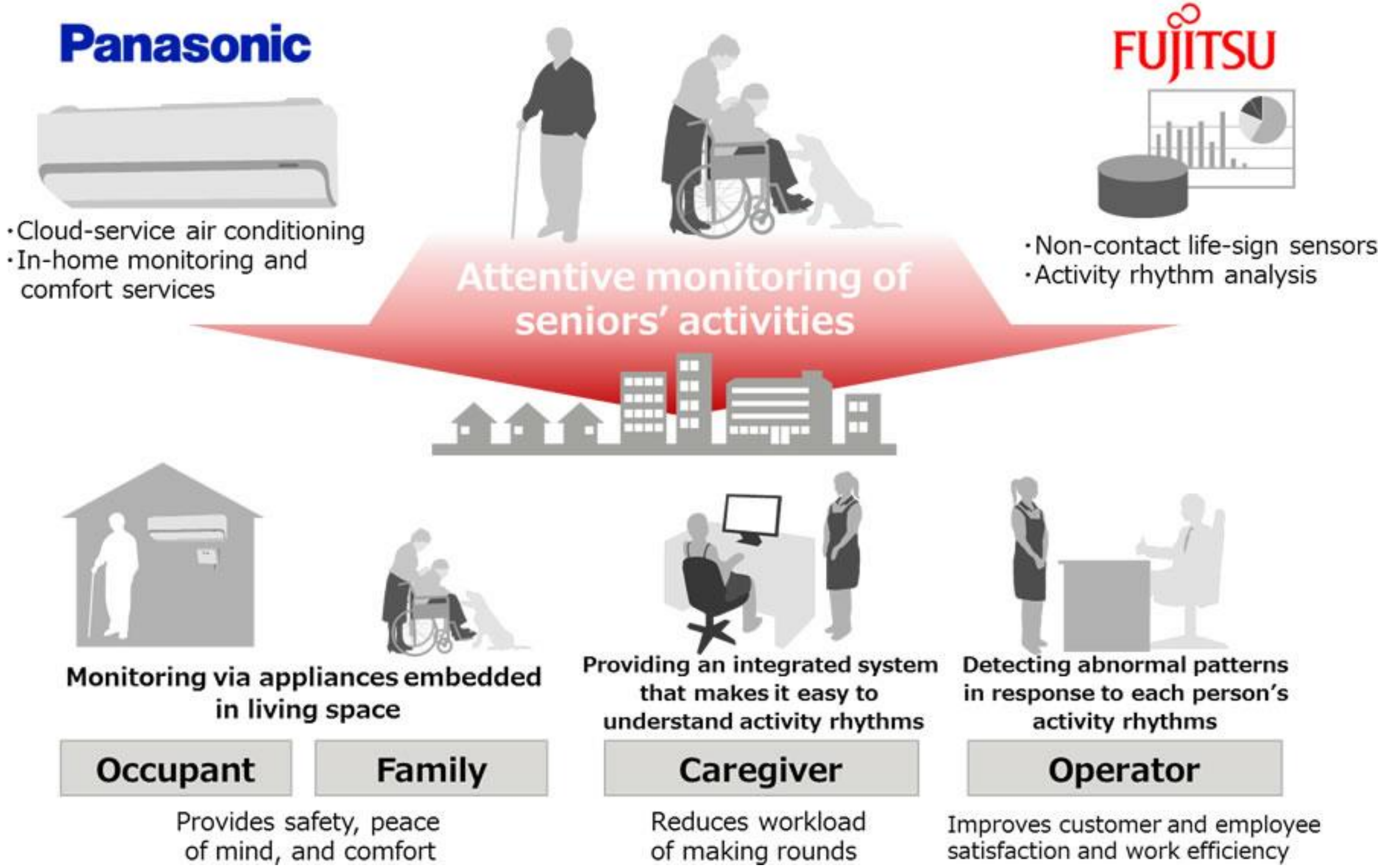
Benefits

- Avoid breaching data privacy, radar solutions is used for accurately counting foot traffic in retail malls, shops and communal spaces (e.g Fitting rooms, gym, washrooms)
- mmWave radar with Cellular NB-IoT network is completely safe for human. Easy for fitting and installation, Data visualized in Dashboard for management, other sensors like Indoor Air Quality sensors and HVAC control system can be developed based on traffic modelling and sensors
- Lower Maintenance cost



http://www.miothk.com/

Comfort Convenience and Control, Safety & Prevention (3CsSP)



From Smart Home, Smart Building, Smart Neighbourhood

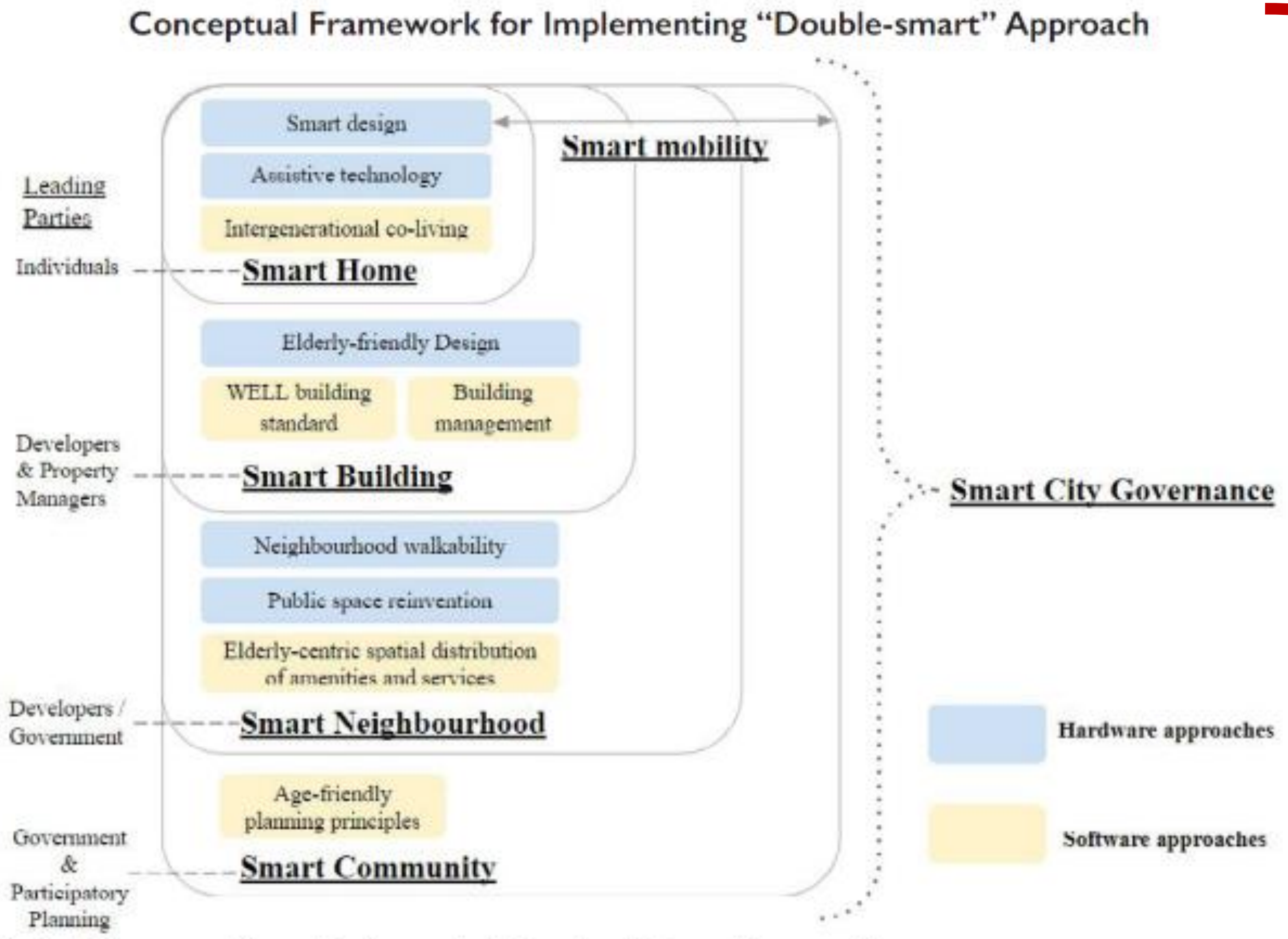
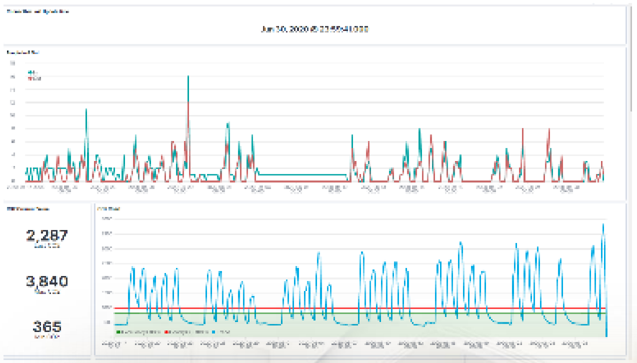


Figure 2 Key concepts in re-defining smart city from the elderly-centric perspective

Data

My vision for the smart home technologies for elderly care

Vayyar Home



Track elderly activities
Fall Detection
Sleep quality analysis
Gait stability analysis
Indoor Air Quality control
Indoor Air Climate Control

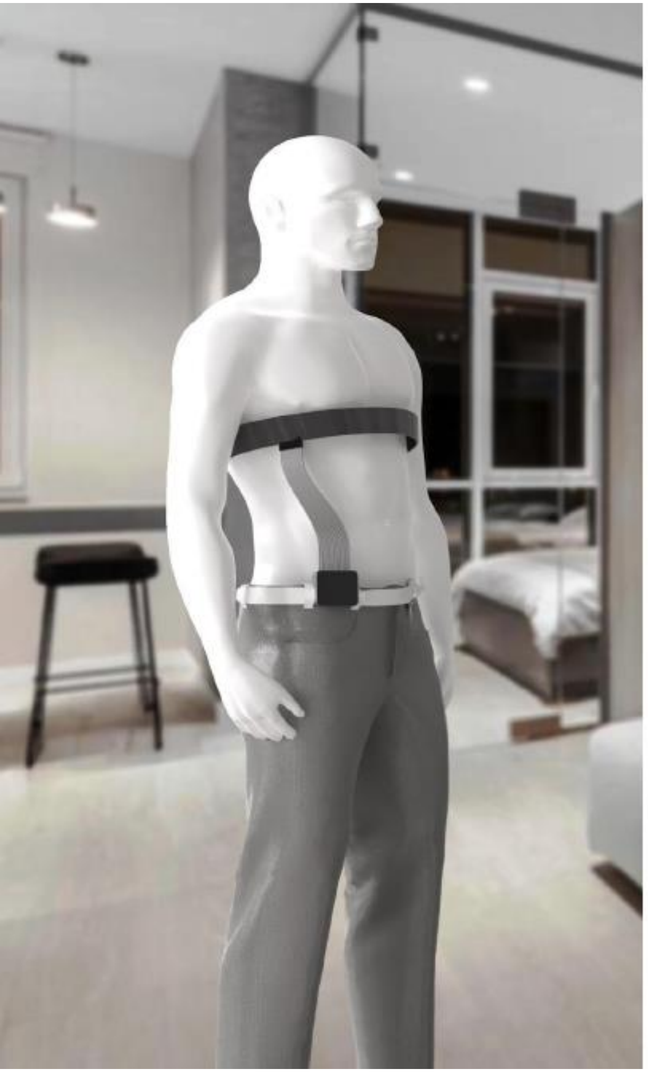
People Tracking in communal area
Presence detection
Activities analysis
Indoor Air Quality control
Indoor Air Climate Control

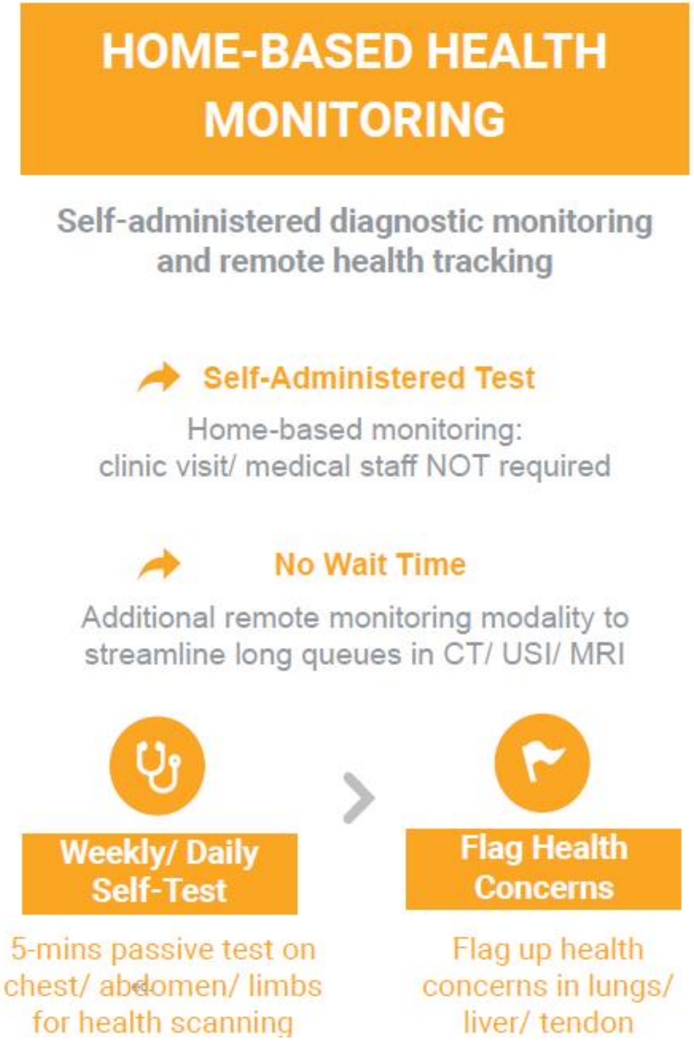
Next step is to consider ECG data capture

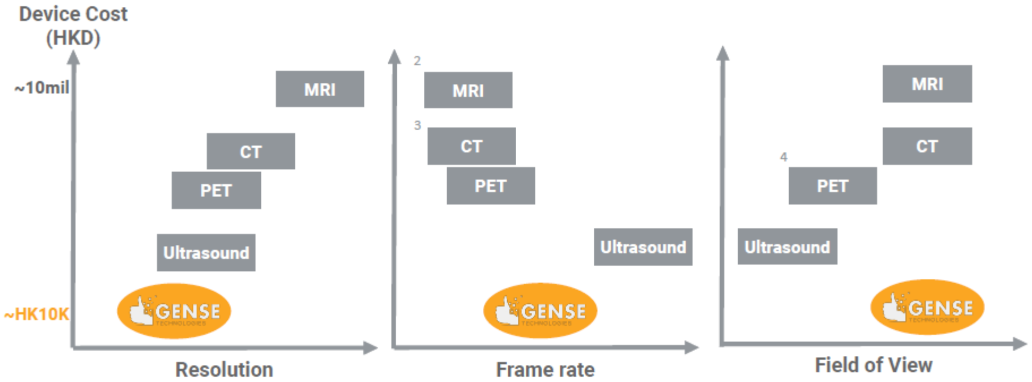
Video Interview by Daniel Chun with York Hwe of BISA
https://www.facebook.com/watch/?v=358422021867617

https://www.bisahealth.com/

Next step is to consider low-cost soft-tissue imaging







MRI = Magnetic resonance imaging PET = Positron Emission Tomography CT = Computer Tomography

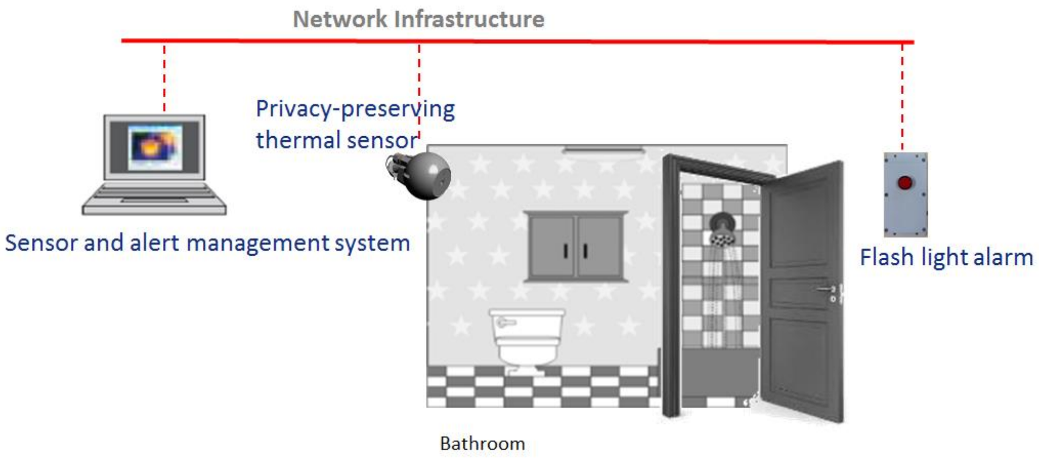
[2]MRI Provides high resolution at 8 fps for regional mapping with the low dose of recommended amount of contrast agent.
[3]CT in lungs has low frame rate because of low dose radiation with contrast agent.
[4]PET in lungs typically small FOV since low dose of tracer; specifically to screen lung nodules.

http://gense.tech/

Is there any other alternative ?

Infrared Thermal Sensing Safety Alert System for Elderly

長者紅外線熱能感應安全監護系統

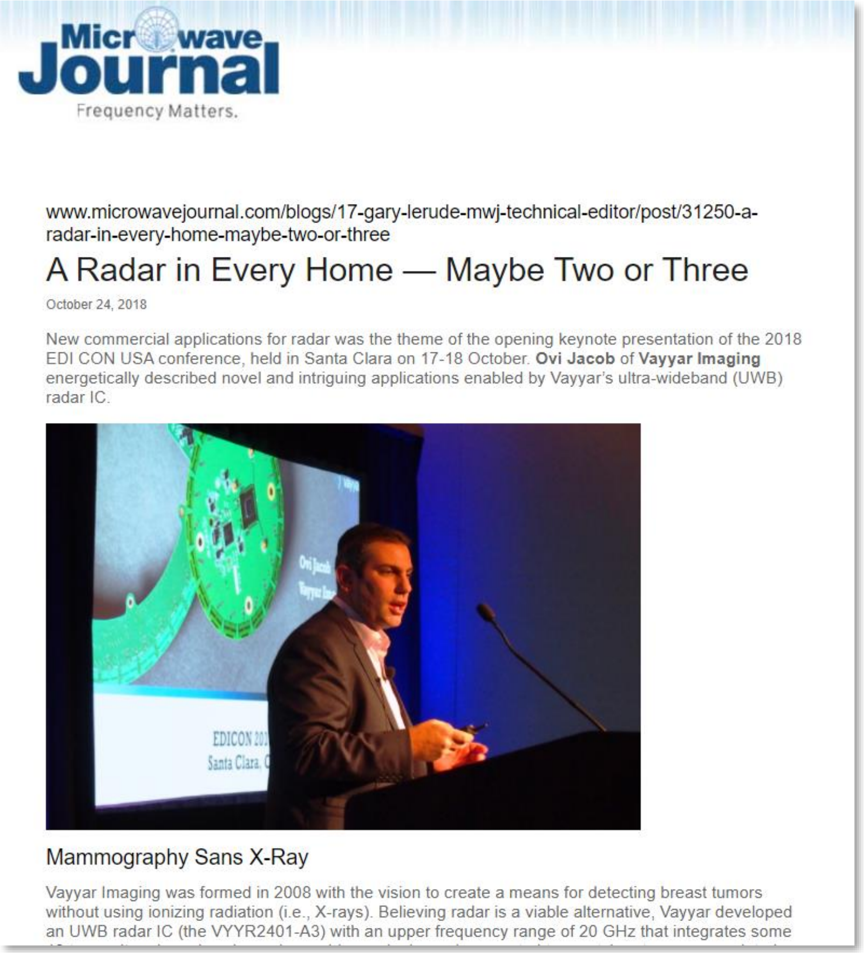


Logistics and Supply Chain MultiTech R&D Centre
物流及供應鏈多元技術研發中心

The Infrared Thermal Sensing Safety Alert System for the Elderly is a privacy preserving system which monitors an individual's safety in a private space by analysing the real-time thermal data of the private space to detect the human movement. When the body movement of the individual is not detected for a period of time, an alarm will alert the caretakers that the individual is in danger. It consists of several movement sensitivity levels and can be installed easily inside a toilet or a bathroom.

In 2019, the system won a Gold Medal at the 47th International Exhibition of Inventions Geneva. It also received a Silver Medal at the 1st Asia Exhibition of Inventions Hong Kong which was held in 2018. There were wide media coverages about the system.

Radar for Every Home



Microwave Journal
Frequency Matters.

www.microwavejournal.com/blogs/17-gary-lerude-mwj-technical-editor/post/31250-a-radar-in-every-home-maybe-two-or-three

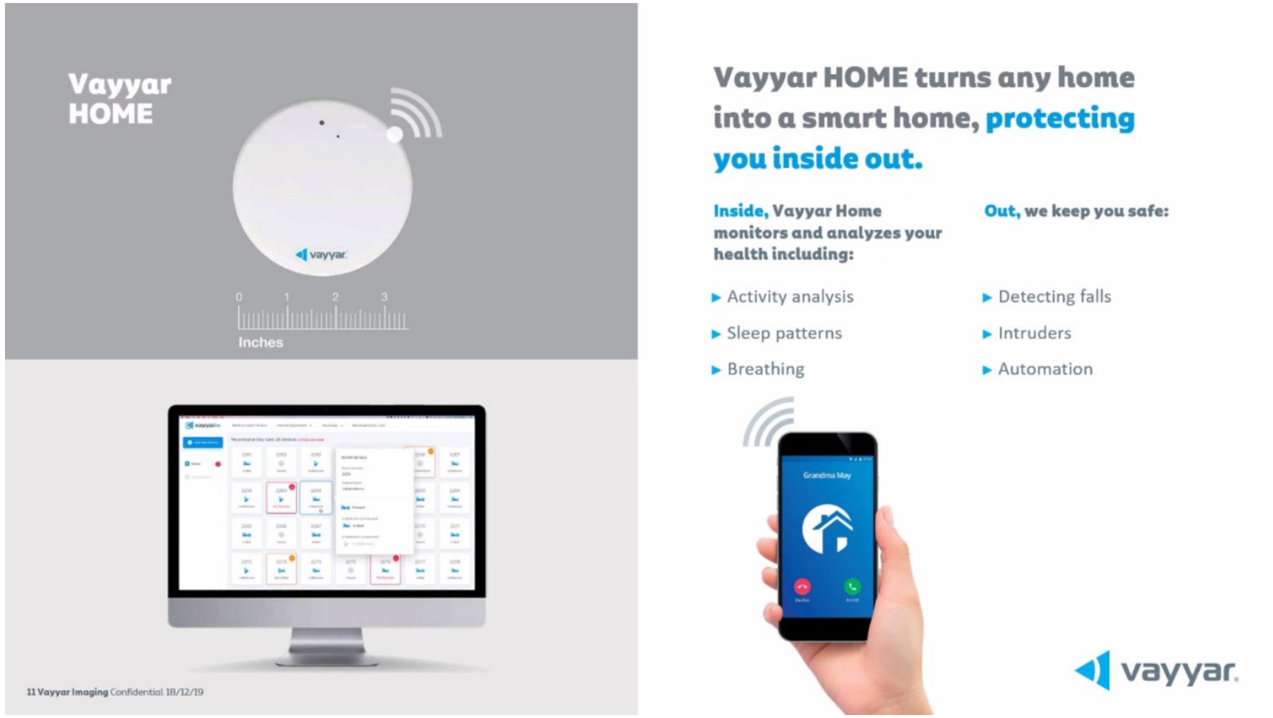
A Radar in Every Home — Maybe Two or Three

October 24, 2018

New commercial applications for radar was the theme of the opening keynote presentation of the 2018 EDI CON USA conference, held in Santa Clara on 17-18 October. **Ovi Jacob** of **Vayyar Imaging** energetically described novel and intriguing applications enabled by Vayyar's ultra-wideband (UWB) radar IC.

Mammography Sans X-Ray

Vayyar Imaging was formed in 2008 with the vision to create a means for detecting breast tumors without using ionizing radiation (i.e., X-rays). Believing radar is a viable alternative, Vayyar developed an UWB radar IC (the VYYR2401-A3) with an upper frequency range of 20 GHz that integrates some



https://www.microwavejournal.com/articles/print/31250-a-radar-in-every-home-maybe-two-or-three

Radar technology showcase

With MIoT and Vayyar

Reading Resources and references

Smart City Academy

Smart City 3.0 E-Book

https://smartcity.org.hk/en/info-smartcity.php

Smart Vision Magazine

https://smartcity.org.hk/en/info-vision.php

Blueprint Advisory Report(s) 2016, 2017, 2020

https://smartcity.org.hk/en/info-research.php

Abstract

One of the most important element for assisted living for elderly care should be in home monitoring

Smart Home technologies typically offers these promises Comfort, Convenience, Control, Safety and Prevention (CCCSP). The 3Cs brings a lot of time-saving, automation and value in smart living and possibly increase the value of your property. Whereas, Safety and Prevention (SP) helps provide a well-balanced preventive care environment for the household occupants. And to do this, either you can rely on human or machine to do the same job. This presentation will focus on technology that focus in monitoring in home. Then the next question we asked ourselves is what are the problems that are burning and need to be solved with new latest smart home and IoT technologies. We want to focus on the problem in elderly occupants falling in any residence – inside home or elderly centre. We all know that any type of falling will be detrimental and will cause head injury and fracture, but this problem magnifies more for anyone older than 65. According to the Elderly Commission in Hong Kong, each year 25% of community dwelling elders suffer from fall. 75% of them get injury include head injury and fracture. Elders who fell in the past six months had shown to have increased risk of fall in near future. With various solutions available in the market, what are the most useful and commercially sound implementation of using these assisted living technologies. Are these technologies applicable in the Hong Kong market. This session attempts to provide insights to elderly home care centres, property developers and property managers how best to adopt latest technologies in home care for the elderly without infringing privacy issues

Reference:

Elderly Commission (2020) Retrieved from https://www.elderly.gov.hk/english/books/files/fall_prevention/Fall_Prevention_booklet.pdf

HKIP Journal (2019) – Page 28-32 To what Extent does smart city technologies solves problems with our aging population Retrieved from https://static1.squarespace.com/static/591e6a001b631bff6312f919/t/5d89affc87e82e702f513c8f/1569304663088/f+HKIP+Journal+33.pdf

The author / presenter is Daniel Chun who is currently CEO at a smart living – home automation technology company with over 30 years experience in the technology sector from telecom infrastructure, network services to consumer electronics; the author is also serving as the Vice President at Smart City Consortium

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