•      **A Self-Reliant Umbrella**

•       **Lin Chen**

The Chinese old-old (80+) population has steadily increased in recent years; however, limited studies have examined how this group ages. The purpose of this study is to explore how the old-old in urban China defines successful aging. Guided by grounded theory, we conducted semi-structured, in-depth interviews with community-dwelling old-old participants (N = 97). Participants identified self-reliance as the goal of successful aging, which was supported by four proactive behaviors: physical activity, financial security, community connectedness, and willing acceptance of reality. In our model, we conceptualized these four proactive behaviors to constitute the ribs of an umbrella, supporting a canopy to protect the pole of self-reliant successful aging. This study offers a new understanding of the dynamic and nuanced ways that the old-old in urban China age successfully and of their valiant efforts to maintain self-reliance.

**ADVANTAGES AND APPLICATIONS:**

•        Staying Connected in the Community

•        Maintaining Financial Security

•        Participating in Physical Activity

•        Aiming for Self-Reliance

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* An IoT Solution for Independent Elderly
* [**Elena Borelli**](https://www.researchgate.net/profile/Elena-Borelli)

In this work, a flexible and extensive digital platform for Smart Homes is presented, exploiting the most advanced technologies of the Internet of Things, such as Radio Frequency Identification, wearable electronics, Wireless Sensor Networks, and Artificial Intelligence. Thus, the main novelty of the paper is the system-level description of the platform flexibility allowing the interoperability of different smart devices. This research was developed within the framework of the operative project HABITAT (Home Assistance Based on the Internet of Things for the Autonomy of Everybody), aiming at developing smart devices to support elderly people both in their own houses and in retirement homes, and embedding them in everyday life objects, thus reducing the expenses for healthcare due to the lower need for personal assistance, and providing a better life quality to the elderly users.

* **APPLICATIONS AND ADVANTAGES:**
* Easy to install.
* Pleasentness to wear and tactile feel.
* Pleasentness with different colors and texture

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* Smart Homes for Elderly Healthcare
* [Sumit Majumder](https://pubmed.ncbi.nlm.nih.gov/?term=Majumder%20S%5BAuthor%5D), [Emad Aghayi](https://pubmed.ncbi.nlm.nih.gov/?term=Aghayi%20E%5BAuthor%5D)

Advancements in medical science and technology, medicine and public health coupled with increased consciousness about nutrition and environmental and personal hygiene have paved the way for the dramatic increase in life expectancy globally in the past several decades. However, increased life expectancy has given rise to an increasing aging population, thus jeopardizing the socio-economic structure of many countries in terms of costs associated with elderly healthcare and wellbeing. In order to cope with the growing need for elderly healthcare services, it is essential to develop affordable, unobtrusive and easy-to-use healthcare solutions. Smart homes, which incorporate environmental and wearable medical sensors, actuators, and modern communication and information technologies, can enable continuous and remote monitoring of elderly health and wellbeing at a low cost. Smart homes may allow the elderly to stay in their comfortable home environments instead of expensive and limited healthcare facilities. Healthcare personnel can also keep track of the overall health condition of the elderly in real-time and provide feedback and support from distant facilities. In this paper, we have presented a comprehensive review on the state-of-the-art research and development in smart home based remote healthcare technologies.

**APPLICATIONS AND ADVANTAGES:**

* Healthcare services
* Transportation
* Security and surveillance
* Transportation
* **A Smart Water Bottle for New Seniors**

* **Nam Eui Lee**

Water intake is important for health as it helps build the resilience of respiratory organs, especially among elderly people. However, elderly individuals are unaware of appropriate ways to consume water including adequate intake, timings, frequency, etc. This study attempted to identify the potential for consuming water, existing problems, types of consumers, and water intake behavior for new seniors. Survey and in-depth interview data were collected, and a “persona” was used to understand new seniors’ goal and needs. The results showed that they struggled to adhere to habitual water consumption. Further, a smart water bottle that guides users to consistently drink appropriate amounts of water was addressed by applying the Internet of Things (IoT) technology to health care services.

**APPLICATIONS AND ADVANTAGES:**

* Daily Hydration Statistics.
* Free of Impurities
* Can Easily Be Stored
* **AN IOT BASED HEALTH CARE SYSTEM FOR ELDERLY PEOPLE**
* **Sathish Kumar.R**

There is a rising concern in designing options for elderlies residing in a society with an increased population ageing. IoT is a revolutionary phenomenon that transforms our life entirely as well as aims to revolutionize current healthcare into a more individualized, precautionary and inclusive approach to treatment. In order to integrate these two main problems, this research provides an IoT-ready approaches for elderly living treatment that can track and record critical details for patients in emergencies and include protocols for activating alarms.The strong low / low-cost / wireless capabilities make this approach into a secure and convenient wristband, perfect for anywhere and anywhere. There has been a strong device efficiency for incorporated functionalities and an overall battery life time of 306 hours (around 12 days) has been reached with respect to autonomy. Without the need of the out - of-range alarm, the device has demonstrated its output within a distance of 60 metres.

**APPLICATIONS AND ADVANTAGES:**

* Lower Costs
* Improved Outcomes of Treatement
* Better Disease Control
* **Smart Wheelchair Based on IoT for Disabled and Elderly People**
* **Anantha Rushitha Lakshmi**

Pervasive devices are becoming an integral part of people\'s daily lives. Smart gadgets make people\'s lives easier and are becoming an essential part of the lives of physically tested and matured people. The need for safe and unrestricted mobility for the elderly and physically challenged is critical. The study deals with the creation of an Intelligent Wheel-Chair (IWC) that focuses on a certain issue in an exceptionally moderate and prominent manner.Wheel-Chair is controlled by RTOS as its center working framework. It comprises of touchscreen based route navigation alongside obstacle avoidance and fall identification. As a result with voice command movement of the wheel chair is dependent which will help disable and old aged people. The Node MCU used successfully detected the commanded and he Arduino micro-controller used in this project has successfully delivered its purpose.

**APPLICATIONS AND ADVANTAGES:**

* Collision-Free Travel
* User Friendly
* Reduces Man Power
* Less Hardware Requirements
* **IoT framework for improving the life of Senior Citizens**
* **Kayarvizhy N**

Current social scenario of aged people who have to take care of themselves is getting worse. In most cases they either live alone or with their aged spouse. Every day activities become difficult in this environment. There is also a constant risk of something going wrong and help not arriving on time. Their social life with kids and grandchildren is almost non - existent as they don’t live nearby and are not prone to using technically complex gadgets like a smart phone. In this paper we have automated a system with IoT hub device and HDMI based TV interface to give entertainment and to monitor the elders. Our proposed system is very simple and intuitive to use to address this issue. It was evaluated in five senior citizen’s homes and found to be effective

**ADVANTAGES:**

• User Interface

• Safety

• Security

• Social

• Independence

• Overall usefulness

Internet of Things (IOT) Monitoring System

for Elderly

* **Internet of Things (IOT) Monitoring System for Elderly**

Due to the increase number world population of elderly citizen, as well as those who live in solitude, there is an immediate need to develop an intelligent monitoring system at home. Many elderly live independently but living alone can be difficult, if not dangerous, for seniors with declining cognitive abilities. In this research, we present an intelligent monitoring system based on IOT to monitor the elderly. The proposed home health care and monitoring architecture or ICE (IOT Cares for Elderly) will be based on Intel Edison platform. There are sensors integrated in the system to measure human vital sign, sleeping and movement pattern. The output readings will be transmitted to a main ICE central system to detect any abnormalities, give health advises, and even call for help if elderly is in emergency. Moreover, output readings are also transmitted to cloud storage where it is able to provide real time information for close family member and care takers through the development of ICE web and telephone application. This proposed system has many potential and would allow elderly to live healthily and safely despite being alone at home.

**ADVANTAGES AND APPLICATIONS:**

* Increased patient comfort and convenience enable better patient satisfaction and faster recovery times.
* IoT healthcare devices, wearable technology and data access allow physicians to monitor patients with greater precision and provide better-informed treatment.
* IoT security systems increase safety for patients, physicians and staff.
* UV light sanitation systems keep spaces clean and prevent illness.

Internet of Things (IOT) Monitoring System

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**IoT based System for Heart Rate Monitoring**

* **Sahana S Khamitkar**

The Heart Rate Monitoring system is developed using IOT technology with an objective of detecting the heart beat of the patient in order to monitor the risk of heart attack and also the regular checkup. Body health monitoring is very important to us to make sure our health is in excellent condition. One of the vital parameter for this device under consideration is the heart rate (HR). In this project we describe the design of low cost heart rate monitoring device from fingertips based on the Bluetooth technology. The entire system is comprised of several parts such as Heart Rate module, Android application and Bluetooth module. The Heart Rate (HR) module picks up heart rate signal by a non-invasive technique (Photoplethysmography) from the subject

(patients) and sends it (signal) wirelessly to computer or android application using Bluetooth module. This system can be embraced and combined as a part of telemedicine constituent. The data received from heart rate module can be saved and viewed for further medical usage. The result from this device prototype can be utilized for various clinical investigations, indeed these Bluetooth’s signal can be transmitted between 15 to 20 meters radius.

**ADVANTAGES:**

* Control system is developed
* Data acquisition
* Flexible
* Reliable

* **IoT Based Two Way Safety Enabled Intelligent Stove**
* [**Mariha Afroz**](https://www.researchgate.net/profile/Mariha-Afroz)

Smart embedded systems have become a core component in the latest technologies, and IoT based smart embedded system is the trendiest field in the research area. In our research, we are proposing an IoT based smart stove. Any accident might occur at any time from a stove. So we are designing a two-way safety enabled stove with a child lock system and gas leakage detection feature. The intelligent stove will try to ensure safety and will detect age from real-time video streaming. Our main focus is a child would not be able to turn the stove on. As well as, the stove can entitle safety via gas detection alarm. We are using a Raspberry Pi and Gas Detection Module with a buzzer for the hardware implementation. Also, we are applying a Machine Learning object detection algorithm (Haar Cascade) and a deep learning architecture (CNN) for the system execution. Since our stove is IoT-based, the stove is ensuring safety remotely as well as manually which will try to prevent accidental occurrences

**ADVANTAGES:**

1. Users may forget they have something cooking on the stove when they are busy. Therefore, when a pot or pan boils dry, a sensing element is required to detect the high temperature and issue light or sound alarms to warn residents and neighbors.

(2) When a pot or pan catches fire because of an overly high temperature or a high alcohol content in food, the fire incident may become more serious if it is not handled appropriately. Therefore, an automatic gas shutoff device is necessary in such a situation.

(3) When a household kitchen catches on fire, the owner must report the accident to the management center or emergency units immediately via a communication mechanism. However, if the main entrance door to the house is locked, the optimal time for rescue may be missed. Therefore, the kitchen fire prevention system automatically unlocks the door to enable others to enter the house for rescue operations.

(4) When users are unsure whether they have turned off the stove, they can view the live video of the stove by using the remote monitoring system. If the stove is still turned on, a remote control system is required for the users to shut off the gas supply to the stove.

* **IoT Based Pill Reminder and Monitoring System**
* [Sultan Ahmad](https://www.researchgate.net/profile/Sultan-Ahmad)

There are many people around us who are the victims of chronic disease. Most of them suffering from dementia. Some people overlook to take care of health. Because of the lack of an expert system, people are forced to submit in frequent health related problems. By analyzing the data, an internet of things (IoT) based reminder system has been developed. It is designed to assist the patient who forgets to take medicine. The proposed system consists of an IoT enabled device and an android application. It mainly focuses on dementia patient. But it is beneficial for all. Patients will no longer have to worry about daily medication. The application will send a notification when it’s time to take medicine. The mobile application is used for keeping the record in medicine details and reminding the schedule of medicine. We have used the IoT enabled Arduino device for monitoring the whole system. The device can sense whether a patient has taken medicine or not with the help of the infrared (IR) sensor. We have tried to develop a system which will help patients to manage their health care properly. (PDF) IoT Based Pill Reminder and Monitoring System.

**ADVANTAGES:**

* Low cost efficient
* mobile application
* Power Efficient
* Indicators for the blind people