

New functionalities that we considered to be added to a smart home are:

**Smart Lock System:** Enhancing the lock system by connecting to the internet, making them robust and productive. [1]

**Smart Oven:** Automatic detection of an amount of heating that has been applied to an object of heating such as a frozen pizza or a piece of toast [2]

**Smart Vacuum Cleaner:** To perform its task with no external support, the system is equipped with a radio-frequency identification (RFID) reading device and provided with an additional power source. [3]

**Smart Garden:** The watering requirement for a plant using hydroponics growing systems can be adjusted by monitoring the soil moisture, measuring the soil moisture of a plant gives information if the plant is ideally watered, over watered, or under watered.[4]

**Smart Lawn Mower:** Lawn Mower will be smart enough to mow the lawn on its own with an IOT (Internet of Things) to achieve interconnectivity between machines.[5]

**Self Cleaning Toilet:** It has a hollow rim with openings in the top surface of the rim whereby urine and other residues accumulating thereon are rinsed during flushing of the toilet. The water drains into a trough along the periphery of the bowl and into the toilet bowl.[6]

### **Challenges of the new functionalities of a Smart Home**

Smart home is a connected home that connects all types of digital devices to communicate with each other through the internet. These devices form a home area network where communications are enabled by different standards and technologies there is problem exists in their connectivity.[7]

### **REFERENCES**

1. Scalisi, J. F. (2015). U.S. Patent No. 8,947,530. Washington, DC: U.S. Patent and Trademark Office.
2. Harris, S. C. (2012). U.S. Patent No. 8,193,474. Washington, DC: U.S. Patent and Trademark Office.
3. Bryndin, E. (2019). Social Cognitive Smart Robots: Guide, Seller, Lecturer, Vacuum Cleaner, Nurse, Volunteer, Security Guard, Administrator. Communications, 7(1), 6-12.
4. Al-Omary, A., AlSabbagh, H. M., & Al-Rizzo, H. (2018). Cloud based IoT for smart garden watering system using Arduino Uno.
5. Kirubha, S. B., Gokhularamanan, K., Bharathi, E. S., & Rajan, P. B. Smart Lawn Mower.
6. Howard, F. T. (1997). U.S. Patent No. 5,596,774. Washington, DC: U.S. Patent and Trademark Office.
7. Samuel, S. S. I. (2016, March). A review of connectivity challenges in IoT-smart home. In 2016 3rd MEC International conference on big data and smart city (ICBDSC) (pp. 1-4). IEEE.