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Internet of Medical Things for Independent Living and Re-learning

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Outline

- Introduction to IoT, IoMT & Re-learning
- Motivation
- Research Problems
- Research Contribution
- Conclusion and Future Work
- References

Internet of Things

- The emerging notion of independent living or ambient assisted living is realized due to the vast and revolutionary role of the Internet of Things (IoT)

- Several IoT-based portable and wearable devices for instance, smartwatches, smart rings, smart necklace and Fitbits are equipped with, on/inside the human body to collect the desired data for effective diagnosis and cure.

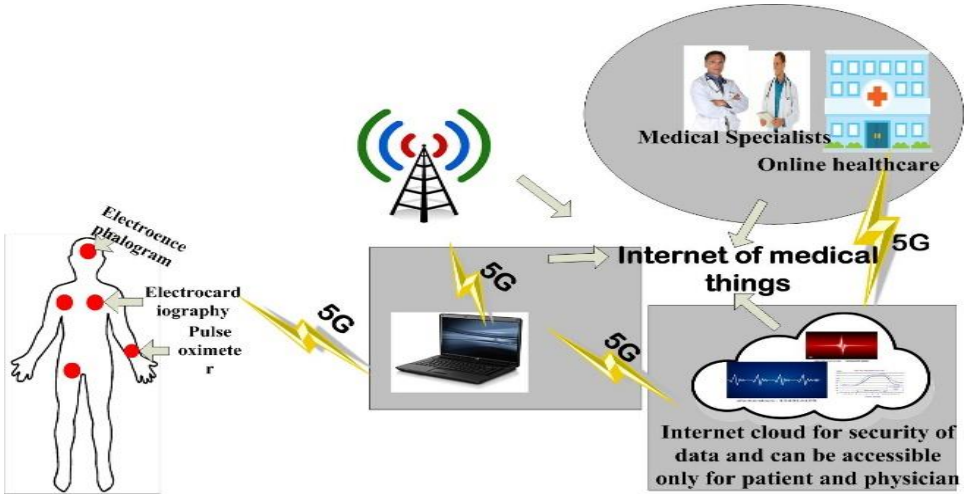
- The mobility of IoT devices and pervasive features of integrated technologies adopt different healthcare applications with wide coverage and sustainable connectivity.

Internet of Medical Things

- The IoMT comprises of different sensor nodes connected. They acquire the data and transfer it to gateway devices that communicate this information through cloud by internet.

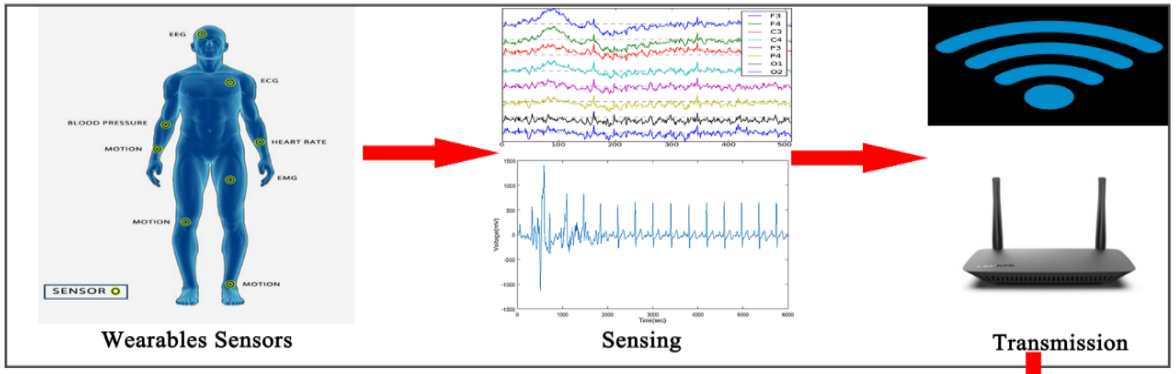
- The IoMT system incorporated with medical devices (sensors) for given the healthcare facilities to the patient and physician can have capability to monitor the patients very efficiently.

- IoMT have potential for many different health care and wearable computing applications.

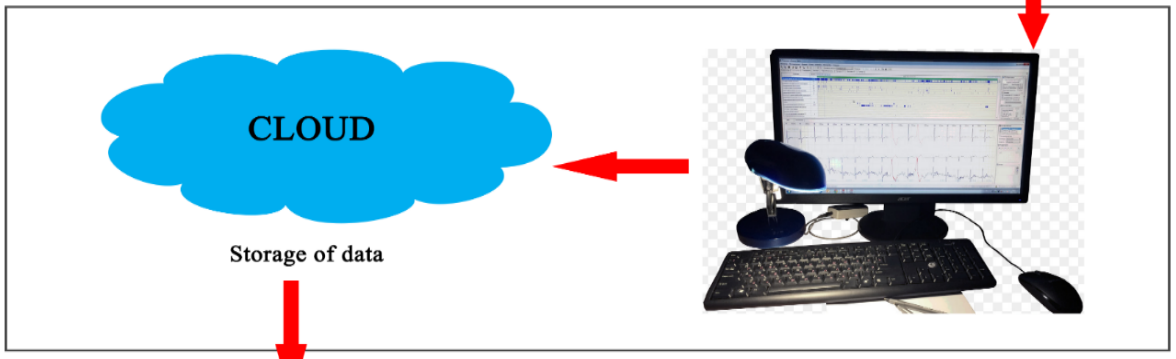


Data Transmission in IoMT

DATA AQUISITION
SENSING
TRANSMISSION



DATA CLOUD
PROCESSING



DATA ANALYTICS &
VISUALIZATION

Re-Learning for Elderly Patients

- In the e-health area, re-learning has been described as the process for an adult to recover useful instrumental activities of daily living skills that have been lost after an impairment .

- A process with the aim of improving the quality of life and well-being of patients, to increase their potential for an independent living.

- Often, the re-learning consists of an unstructured process that has been referred to as the Trial-and-Error method, with skills acquisition by guessing correct responses and learning from errors.

Smart Healthcare for Elderly Patiens

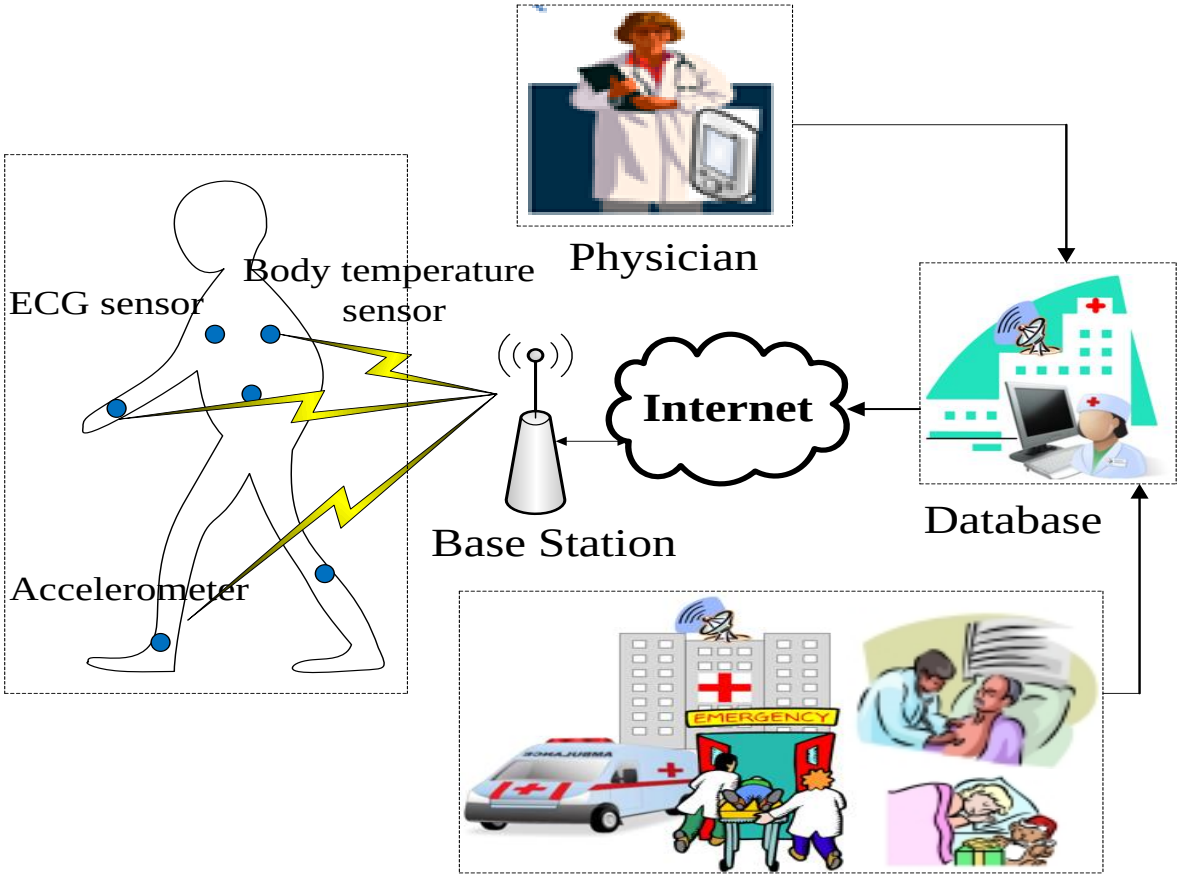


Fig. 1 IoMT for Smart and cost-effective Healthcare

Motivation: IoMT for Elderly and Connected Healthcare

- IoMT is the key driver to revolutionize medical field with wearable devices.
- IoMT have attracted an attention of multi-disciplinary fields as a promising and ubiquitous health monitoring technology.
- The prime objective of smart and connected healthcare technologies is to provide low power, battery-aware and highly reliable communication for on-body or implanted devices.
- The IoMT are mostly used for the remote area patients where medical facilities are insufficient or unavailable.

Motivation: IoMT for Elderly Emergency Healthcare

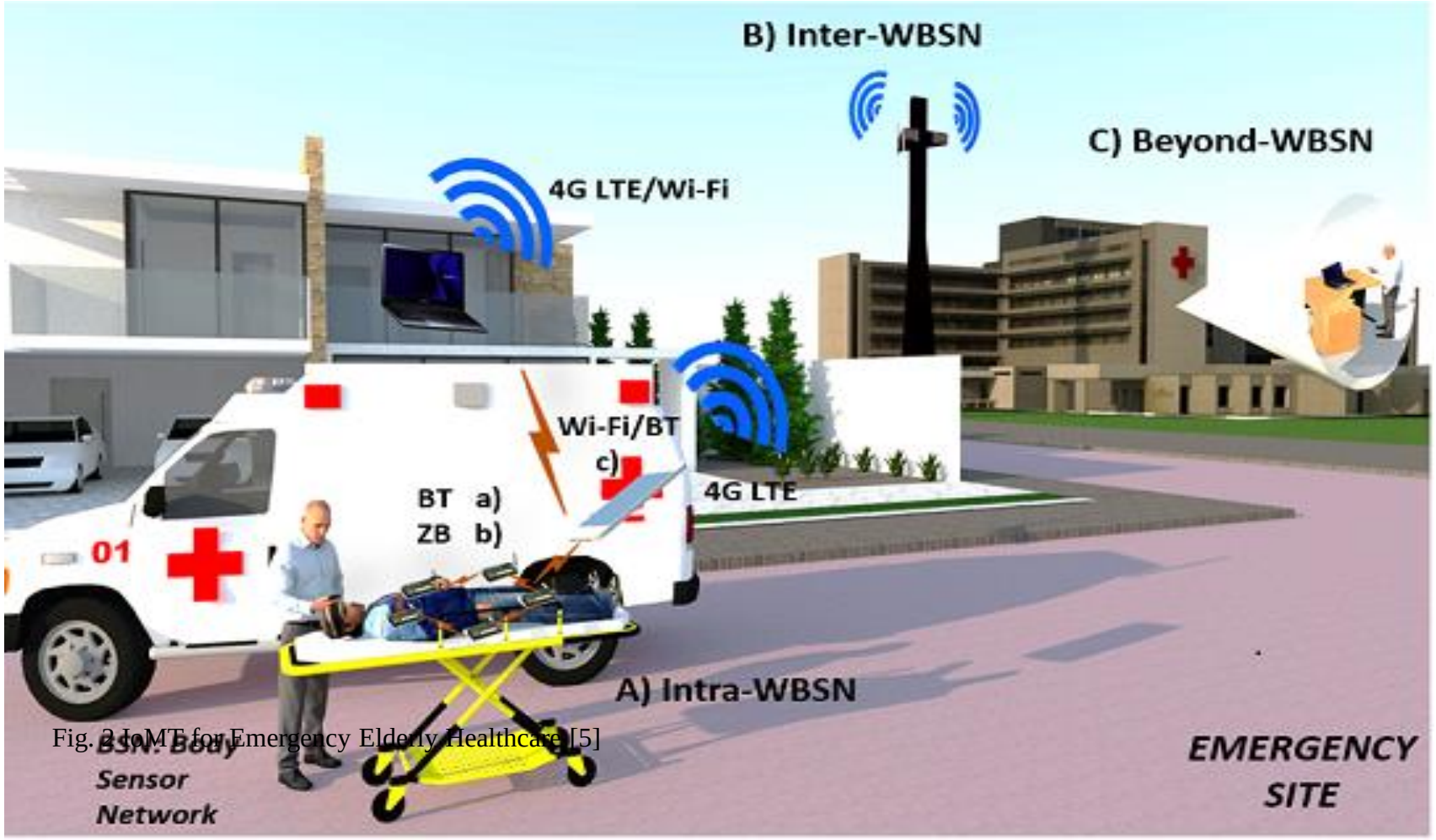


Fig. 2 IoMT for Emergency Elderly Healthcare [5]

Research Problems

- IoT and IoMT based wearable devices suffer from high power drain and limited battery life, due to their small size and resource-constrained nature.

- It is challenging to replace or recharge battery of the nodes instantly in remote areas, and the battery drain may put the patient's life at risk.

Our contribution

- To present better insight about the role and importance of Internet of Medical Things (IoMT) for independent living and re-learning to older adults.

- To determine role of sensing technologies are the paradigm shift for transforming conventional healthcare practices into the smart, and self-assisted activities, which envisioned for today's medical world.

- To present relationship between IoT and IoMT with other inter-related technologies for promoting independent living and re-learning practices.

Conclusion and Future Work

- Independent living and re-learning are main activities to be practiced effectively by the older adults on a daily basis to keep themselves happy and healthy.

- This can be possible through the emerging sensing technology, IoT and IoMT driven wearable devices. Besides, smart and pervasive healthcare is based on the fundamental characteristics of these unobtrusive portable and lightweight devices.

- Due to their highly intelligent sensing and processing capabilities IoMT easily provides the ‘smart and cost-effective healthcare for older adults’.

- Finally, the implementation of IoMT to support re-learning and independent living share the same concerns as other e-health technologies: trust, security, personal integrity, user acceptance, and accessibility of ICT.

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Thank You
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