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J-BHI Special Issue on "AI and 5G empowered Internet of Medical Things"

The recent developments in biomedical sensors, wireless communication systems, and information networks are transforming the conventional healthcare systems. The transformed healthcare systems are enabling distributed healthcare services to patients who may not be co-located with the healthcare providers, providing early diagnoses, and reducing the cost in the healthcare section. The Internet of Medical Things (IoMT), which includes medical devices, wearable devices, sensors and apps, is a critical piece of the digital transformation of healthcare, as it allows new business models to emerge and enables changes in work processes, productivity improvements, cost containment and enhanced customer experiences. IoMT can help monitor, inform and notify not only care-givers, but provide healthcare providers with actual data to identify issues before they become critical or to allow for earlier invention.

While IoMT offers enormous benefits, the ubiquitously connected devices also pose new challenges. On the one hand, there has been a great improvement in cyberinfrastructure in the era of Industry 4.0, which enables high-frequency long term observational medical data being collected with the help of IoMT. How to convert these data into relevant critical insights that can then be used to provide better care poses a great challenge. On the other hand, although IoMT applications can run well on exiting wireless communication technology, i.e., 4G LTE, there will be others in the future that will require single-digit milliseconds latency and massive bandwidth such as telesurgery. To tackle these challenges, integration AI and 5G into IoMT may achieve an elegant breakthrough in terms of seamless interoperability, low cost, high speed, and low latency, and increased efficiency. Considering the benefit of AI and 5G for IoMT, various AI/5G empowered frameworks/architectures/systems for smart healthcare have been proposed. Even though these approaches have achieved certain success, there exist various scientific and engineering challenges. These open issues call for extensive attention from both academia and industry

Topics of interest include, but are not limited to, the following:

- AI for medical big data mining
- IoT system architectures in healthcare
- AI-enabled IoMT for smart healthcare
- AI and 5G applied in medical domain
- Medical data transmission, acquisition, cleaning and integration
- Deep learning for medical image processing
- Natural language processing in medical documents
- AI and 5G empowered IoMT
- 5G for telehealth virtual consulting
- AI and 5G based remote patient monitoring
- Security, trust and privacy issue for IoMT
- Theories about 5G and AI evolution in healthcare computing

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