1- DEEP-LEARNING-EMPOWERED BREAST CANCER AUXILIARY DIAGNOSIS FOR 5GB REMOTE E-HEALTH

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Abstract

Breast cancer, the most common cancer in women, is receiving increasing attention. The lack of high-quality medical resources, especially highly skilled doctors, in remote areas makes the diagnosis of breast cancer inefficient and causes great harm to women. The emergence of remote e-health has improved the situation to a certain extent, but its capabilities are still hampered by technical limitations, which manifest in two main aspects. First, due to network bandwidth limitations, it is difficult to guarantee the real-time transmission of breast cancer pathology images between remote areas and cities. Second, the highly skilled breast cancer doctors at large city hospitals are not guaranteed to be available for online diagnosis at all times. To overcome these limitations, this article proposes a deep-learning-empowered breast cancer auxiliary diagnosis scheme for remote e-health supported by 5G technology and beyond (5GB remote e-health). In this scheme, breast pathology images are first received from major hospitals via 5G, and a deep learning model based on the Inception-v3 network is subjected to transfer learning to obtain a diagnostic model. This diagnostic model is then employed on edge servers for auxiliary diagnosis at remote area hospitals. A theoretical analysis and experimental results show that this solution not only overcomes the two problems mentioned above but also improves the diagnostic accuracy for breast cancer in remote areas to 98.19 percent.

E Health

2- Secure and Energy Efficient-Based E-Health Care Framework for Green Internet of Things

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Abstract

This paper proposes a secure and energy-efficient Internet of Things (IoT) model for e-health. The main objective is to secure the transmission and retrieval of biomedical images over IoT networks. To achieve this, the compressive sensing and five-dimensional hyper-chaotic map (FDHC) are utilized to encrypt the biomedical images. However, FDHC suffers from the hyper-parameter tuning problem. To resolve this, a theta-non-dominated sorting genetic algorithm III (theta-NSGA-III) based FDHC is proposed. Initially, the initial attributes of FDHC are tuned using theta-NSGA-III. Then, the tuned attributes are used by FDHC to generate the secret keys. The obtained secret keys are then utilized to permute and diffuse the input biomedical images. Permutation and diffusion operations are applied row-wise and column-wise on the input biomedical image to perform encryption. The proposed technique is sensitive towards the input images as the permutation and diffusion of each row and column depends upon the initial scrambled row and column Experimental results reveal that the proposed technique outperforms the state-of-art image encryption techniques. The proposed framework encrypts and decrypts images at a higher speed, therefore, it can be used to secure the communication in green IoT networks.

Keywords
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Image encryptiontheta-NSGA-IIIhyper-chaotic mapsparameter tuning

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