سخنرانی علمی

Anomaly detection in medical imaging

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Abstract

Anomaly detection (AD) is a challenging problem in computer vision. Particularly in the field of medical imaging, AD poses even more challenges due to several reasons, including insufficient availability of annotated data, imbalanced datasets, and privacy preservation. In recent years, AD models based on generative adversarial networks (GANs) have made significant progress. However, their effectiveness in biomedical imaging remains underexplored. First, we present an overview of using deep learning for AD, as well as an investigation of state-of-the-art deep learning-based AD methods for biomedical imaging and the challenges encountered in detail by designing and conducting comprehensive experiments. Then, to reduce the existing challenges, the proposed model for AD in medical images using a score-based generative model (SDE) and a pre-trained feature extractor on medical images (MedCLIP) has been designed, developed, and evaluated. In this talk, we address these methods, and we also provide recommendations for the deployment of AD models in medical imaging and foresee important research directions.

Biography

Marzieh Esmaeili received the M.Sc. degree in informatin security from the Amirkabir University of Technology and the Ph.D. degree in medical informatics from Tehran University of Medical Sciences in Tehran, Iran. Her primary research interests include deep learning and computer vision. She focuses on detecting anomaly or novelty in biomedical imaging using deep learning solutions, especially unsupervised approaches.

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