ABSTRACT

Kidney stone detection is a critical task in medical imaging, often involving the analysis of ultrasound or CT images. A hybrid approach combining Butterfly Net and Inception Net models leverages the strengths of both architectures to enhance the accuracy, efficiency, and robustness of the detection process.A lightweight deep learning model designed for efficient feature extraction. Uses a two-stage "butterfly-shaped" architecture to process inputs at varying scales. Reduces computational complexity. A well-known convolutional neural network (CNN) that extracts features at multiple scales using parallel convolutional filters of varying. Captures both local and global image features. Handles complex patterns, such as irregular shapes and varying textures of kidney stones. Combines BFN for initial efficient feature extraction and Inception Net for advanced multi-scale feature refinement. Enhances sensitivity to fine details while maintaining computational efficiency.