**ABSTRACT**

Caused by new blood vessels in chroid glowing through the Bruch’s membrane, choroidal neovascularization (CNV) is a main reason for vision loss in retinal diseases. In clinic treatment, quantitative analysis is essential to help ophthalmologists better diagnose and evaluate CNV. Recently, many effective deep learning methods have been proposed and have achieved good results in medical image segmentation. However, lots of CNVs are small in size and have many kinds of morphological characteristics, making accurate segmentation in OCT images a big challenge. In addition, it is difficult for deep learning models to detect the edges of CNV regions due to its blurry or missing boundary. In order to solve the problems above, we creatively proposed a classification guided Convolutional Neural Network for CNV segmentation in OCT images. A new pyramid mixed pooling (PMP) module is designed to help the network obtain the context and detailed information of the image. With the supervision of classification, the model can effectively distinguish CNV from other retinal diseases. The proposed method is evaluated on our own dataset consisting of 1216 B-scan images. The experimental results demonstrate the advantage of our proposed algorithm.

CNV是由在脉络膜中的新生血管突破Bruch层引起，是视网膜疾病中视力损失的重要原因。在临床治疗中，CNV的定量分析对眼科医师更好的诊断和评估CNV至关重要。最近，许多高效的深度学习方法得以提出并在医学影像分割任务中取得了相当好的效果。但是，许多CNV是一些小目标，同时具有各种各样的形态学特征，使得在OCT图像上的准确分割相当困难。此外，对深度学习模型而言很难识别CNV模糊或缺失的边界。为了解决上述问题，我们创新性的提出了用于在OCT图像中对CNV分割的《由分类引导的卷积神经网络》。同时，提出了一种金字塔混合池化模块用于获取图像中的全局和细节信息。通过分类的监督，模型可以有效区分CNV和其他视网膜疾病。我们提出的方法在我们自己的数据集（由1216张b-scan图像构成）上进行验证。在该数据集上获得的优异结果表明我们提出方法的优越性。