

## 翻译报告

翻译人：吕温和 PB19051177

### 原文：

Abstract— The precise segmentation of retinal blood vessels is of great significance for early diagnosis of eye-related diseases such as diabetes and hypertension. In this work, we propose a lightweight network named Spatial Attention U-Net (SA-UNet) that does not require thousands of annotated training samples and can be utilized in a data augmentation manner to use the available annotated samples more efficiently. SA-UNet introduces a spatial attention module which infers the attention map along the spatial dimension, and multiplies the attention map by the input feature map for adaptive feature refinement. In addition, the proposed network employs structured dropout convolutional blocks instead of the original convolutional blocks of U-Net to prevent the network from overfitting. We evaluate SA-UNet based on two benchmark retinal datasets: the Vascular Extraction (DRIVE) dataset and the Child Heart and Health Study (CHASE\_DB1) dataset. The results show that the proposed SA-UNet achieves state-of-the-art performance on both datasets. The implementation and the trained networks are available on Github.

### 翻译：

摘要——视网膜血管的精确分割对早期诊断与眼睛有关的疾病，如糖尿病和高血压具有重要意义。在这项工作中，我们提出了一个轻量级的网络，称为空间注意力 U 型网络（SA-UNet），它不需要成千上万个带注释的训练样本，并且可以凭

借数据增强的方式来更有效地使用可用的带注释的样本。SA-UNet 引入了一个空间注意模块，该模块可沿空间维度推断注意图，并将注意图与输入特征图相乘以进行自适应特征细化。另外，所提出的网络采用结构化的部分丢弃的(dropout)卷积块代替 U-Net 的原始卷积块，以防止网络过拟合。我们基于两个基准视网膜数据集评估 SA-UNet：血管提取（DRIVE）数据集和儿童心脏与健康研究（CHASE\_DB1）数据集。结果表明，所提出的 SA-UNet 在两个数据集上均实现了最好的表现。执行代码和已训练好的网络在 Github 上可用。