## Research Summary

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| Website | www.sciencedirect.com |
| Main Article Reference Link | https://www.sciencedirect.com/science/article/abs/pii/S0950705119301984?via%3Dihub |
| Article Title | A deformable network for retinal vessel segmentation. |
| Additional References | https://arxiv.org/pdf/1811.01206.pdf |

This article is about the deep neural network (DUNet) for automatic segmentation of retinal vessels. Automatic segmentation of retinal vessels in fundus images plays a vital role in diagnosing diabetes and hypertension. The model exploited the retinal vessels’ local features with a U-shape architecture in an end-to-end manner for retinal vessel segmentation. The recently introduced deformable convolutional networks inspired it.

The DUNet is the extension of U-Net with conventional layers and was designed to extract context information and enable precise localization by combining low-level features with high-level ones. Convolutional blocks replace the convolutional layers of U-Net. Furthermore, DUNet captures the retinal vessels at various shapes and scales by adaptively adjusting the receptive fields according to the vessels’ scales and shapes, and DUNet exhibits state-of-art performance in segmenting the retinal vessels.

I came across a similar article on “Deep Learning for Simulating Harmful Algal Blooms Using Ocean Numerical Model” where regression and CNN model is applied to study the simulating spring blooms. According to this article CNN and regression gave a 96.8% of accuracy. The study of the HABs helps in reducing the economic losses and public health damages.

https://www.frontiersin.org/articles/10.3389/fmars.2021.729954/full