

**Titel:**

Automatic segmentation of current imaging biomarkers in OCT-scans of patients with age-related macular degeneration using U-Net and transfer learning approaches

**Abstract:**

Age-related macular degeneration (ARMD) is a leading retinal disease and one of the most common causes of blindness in the West. Macular degeneration deteriorates the retina's macula. As the degradation happens with the age, it is frequently called as Age-related Macular Degeneration. Several imaging techniques can visualize this condition, including Fundus imaging and Optical Coherence Tomography (OCT). OCT-scans offer significant opportunity to gain a deeper understanding of ARMD and its related biomarkers, such as pigment epithelial detachment (PED), choroidal neovascularizations (CNV), or drusenoid lesions. However, it generates enormous amounts of data, which makes manual OCT analysis time-consuming and impracticable in many instances. Several methods using retinal OCT images for (semi-)automated analysis of specific ARMD biomarkers have already been proposed. As a supplement to existing methods, an automated technique for identifying several early and late ARMD biomarkers from OCT-scans was developed. Using a targeted data augmentation method and the transfer of weights from public datasets, the suggested unet model distinguished four disease biomarkers with minimal loss (~1.5%). With the increasing importance of OCT in the understanding of the course of ARMD, an efficient automated classification with a high diagnostic sensitivity could be a promising option for the future.