**Highlights**

* Accurate categorization of retinal disorders in OCT images enables early detection and tailored treatment, enhancing vision preservation and quality of life.
* Proactive efforts in precise classification contribute to financial savings and societal well-being by minimizing healthcare expenses.
* The development of the "SqueezeNet++ Evo Transformer" framework addresses challenges faced by Deep Neural Networks in categorizing retinal OCT images.
* The framework significantly improves classification accuracy, particularly in imbalanced classes and variability across classes, utilizing innovative methods such as feature pyramid integration, attention mechanisms, and graph convolutional networks.
* Tested on OCT2017, Duke, and real-time datasets, the model achieves a mean accuracy of 99.23% for multiclass classification and 99.69% for binary classification, offering a dependable tool for early disease detection and individualized treatment in ophthalmic care.