

Comparison of uncertainty estimation methods for diabetic retinopathy classification using deep learning

Layman's Summary

This research paper is about applying uncertainty estimation in deep learning models to classify diabetic retinopathy, which is a disease that affects the eyes of people with diabetes that can cause vision loss. The problem with these deep learning models is that they are not always certain in their predictions, which is important in clinical settings. This is why uncertainty estimation has gain attention. The paper compares different methods for estimating uncertainty in the models, including some like Evidential Deep Learning that have never been applied in the field of diabetic retinopathy classification. We propose a new evaluation framework that can distinguish between images from the training distribution and those from other distributions, termed as normal or corrupted, respectively, based on uncertainty estimates. The experiments show that the methods behave differently depending on the severity of the shift and the type of uncertainty. The paper emphasizes the importance of uncertainty estimation for diabetic retinopathy classification and provides insights for future research in this domain.