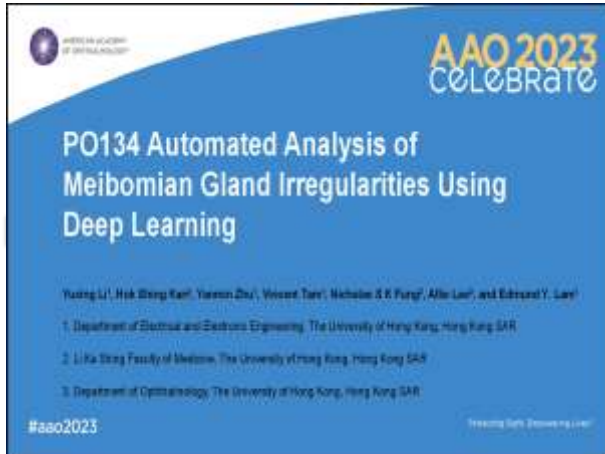




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AAO

Automated Analysis of Meibomian Gland Irregularities Using Deep Learning



Cornea, External Disease

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Purpose To develop a deep learning approach to classify meibomian gland (MG) irregularities and quantitatively analyze their relations to MG atrophy severity degrees. **Methods** A total of 1,200 infrared meibography images were collected from 378 patients. The dataset was split into training-validation-test with a ratio of 8:1:1. A deep learning model was trained to segment MG regions and classify MG irregularities into four types—namely, overlapping, shortening, thickening and tortuosity. The images were divided into four groups according to meiboscore (0-3), and the irregularity ratios were analyzed. **Results** The algorithm achieved an overall accuracy of 97% MG segmentation. The four kinds of irregularities (overlapping, shortening, thickening and tortuosity) were detected with a mean accuracy of 84%. From meiboscore 0 to 3, the overlapping MG ratio decreased by 17%, and the shortening MG ratio increased by 12%. **Conclusion** The deep learning approach provides an automatic and efficient quantitative evaluation of MG morphological features, which would potentially be applicable in disease monitoring and research.

Disclosure: Yuxing Li: None;

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