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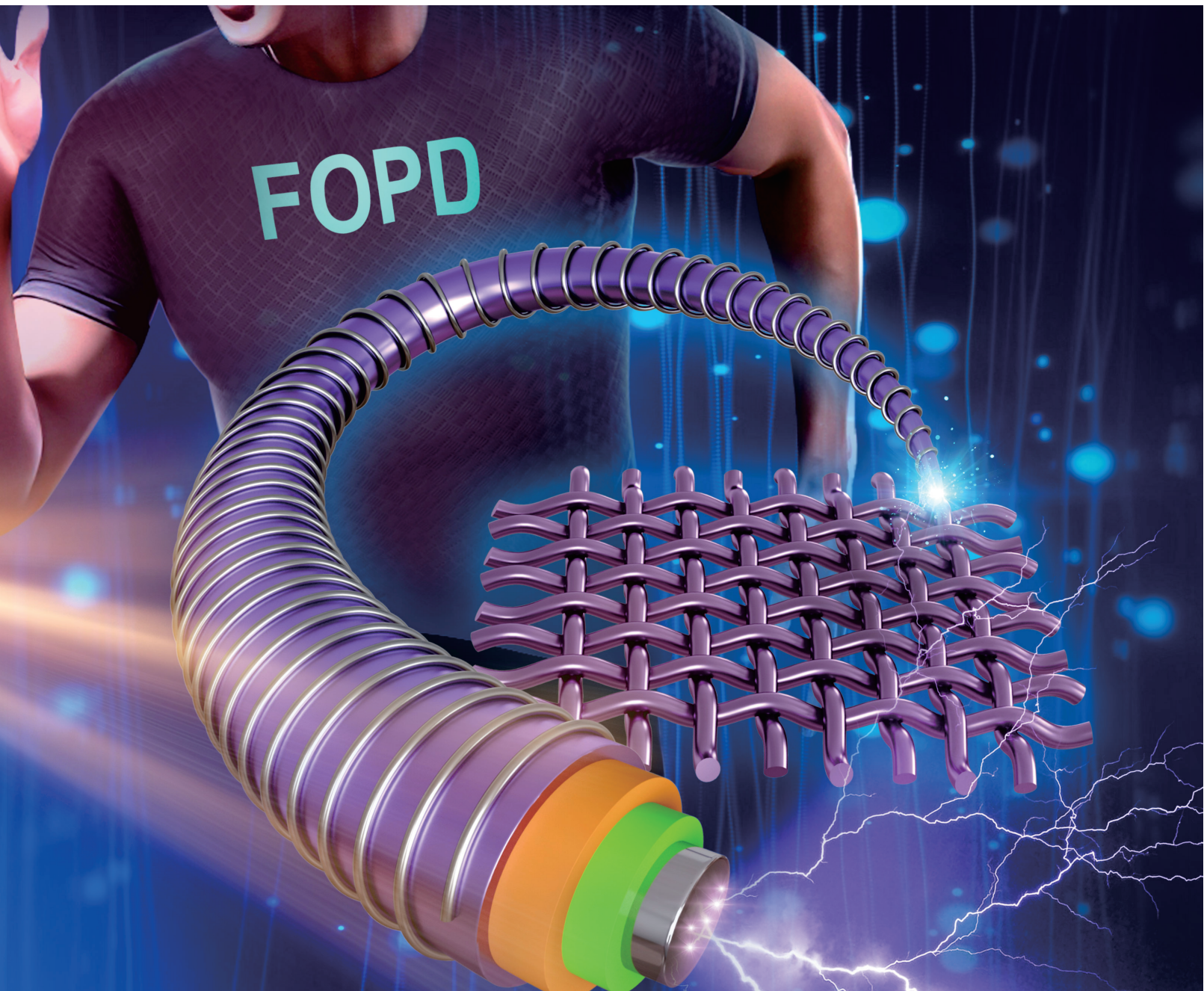

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Review

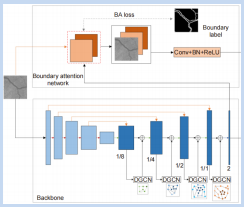
Review of the development of optical coherence tomography imaging navigation technology in ophthalmic surgery 220027
Li Yunyao, Fan Jinyu, Jiang Tianliang, Tang Ning, Shi Guohua

The development of OCT ophthalmic surgical navigation devices was reviewed, and representative OCT systems in each category were introduced. A summary and outlook on the applications of this technology in ophthalmic surgery were finally concluded.

Article

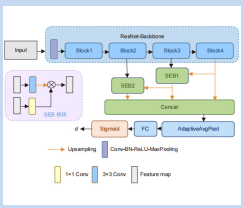
Proposal application and funding status of NSFC projects in optics and optoelectronics in 2022 220318
Tang Hua, Lu Junpeng, Shen Yong, Long Liyuan

The main reform measures of NSFC in the aspects of funding orientation, evaluation mechanism and subject layout in 2022 were introduced. And the application, acceptance and funding status of "optics and optoelectronics" under the reform measures were analyzed statistically.



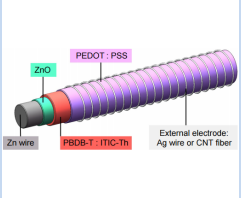
Boundary attention assisted dynamic graph convolution for retinal vascular segmentation 220116
Lv Jia, Wang Zeyu, Liang Haocheng

Based on the U-shaped network, a dynamic graph convolution for retinal vascular segmentation model assisted by boundary attention was proposed. The proposed algorithm was tested on three retinal image datasets, DRIVE, CHASEDB1, and STARE, and good segmentation results were obtained.



Intravascular ultrasound image segmentation combining polar coordinate modeling and a neural network 220118
Liu Jingyu, Cai Huaiyu, Hao Wenyue, Zuo Tingtao,Jia Zhongwei, Wang Yi, Chen Xiaodong

An IVUS image segmentation method based on polar coordinate modeling and dense-distance regression network was proposed. The experimental results showed that the proposed method achieves 100% topology preservation in the media, lumen, and plaque regions, and achieves Jaccard measure (JM) of 0.89, 0.87, and 0.74, respectively.

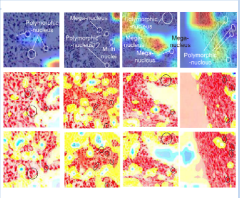


Fabrication and properties of fiber-based organic photodetectors

220151

Wu Xueyuan , Du Xiaosong , Liu Qingxia , Tai Huiling , Wang Yang

The fiber-based organic photodetector (FOPD) was proposed and showed typical rectification characteristics. It is expected to provide new ideas for the development of flexible fiber-based devices and wearable electronics.

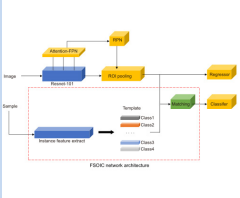


Breast tumor grading network based on adaptive fusion and microscopic imaging

220158

Huang Pan , He Peng , Yang Xing , Luo Jiayang , Xiao Hualiang , Tian Sukun , Feng Peng

An end-to-end adaptive model fusion for deep networks that combine ViT and CNN blocks with integrated attention was presented. The adaptive model fusion approach suggested consists of multi-objective optimization, an adaptive feature representation metric, and adaptive feature fusion, significantly boosting the model's fusion capabilities.

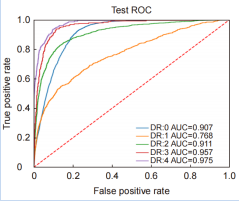


Few-shot object detection via online inferential calibration

220180

Peng Hao , Wang Wanqi , Chen Long , Peng Xianrong , Zhang Jianlin , Xu Zhiyong , Wei Yuxing , Li Meihui

The few-shot object detection via the online inferential calibration (FSOIC) based on the two-stage fine-tuning approach (TFA) was proposed. The experimental results in the VOC Novel Set 1 showed that the proposed method improves the average nAP50 of the five tasks by 10.16% and performs better than most comparisons

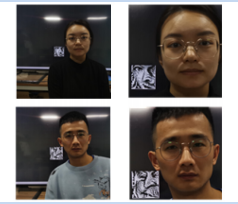


Classification algorithm of retinopathy based on attention mechanism and multi feature fusion

220199

Liang Liming , Dong Xin , Li Renjie , He Anjun

In view of the difficulty in identifying the lesion area in retinal fundus images and the low grading efficiency, an algorithm based on multi-feature fusion of attention mechanism to diagnose and grade DR was proposed.



Adversarial background attacks in a limited area for CNN based face recognition

220266

Zhang Chenchen , Wang Shuai , Wang Wenyi , Li Diran , Li Nan , Bao Hua , Li Shuqi , Gao Guoqing

A local background area based face confrontation attack (BALA) was proposed, which can be used as a privacy protection scheme for CNN face recognizer. Adding disturbance in local background region overcomes the loss of original facial features caused by adding disturbance to foreground face region in existing methods.