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Identity Verification Based on Multimodal Machine Learning on Red Green Blue (RGB) Red Green Blue-Depth (RGB-D) Voice Data

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Abstract : In this paper, we experimented with a new approach to multimodal identification using RGB, RGB-D and voice data. The multimodal combination of RGB and voice data has been applied in tasks such as emotion recognition and has shown good results and stability, and it is also the same in identity recognition tasks. We believe that the data of different modalities can enhance the effect of the model through mutual reinforcement. We try to increase the three modalities on the basis of the dual modalities and try to improve the effectiveness of the network by increasing the number of modalities. We also implemented the single-modal identification system separately, tested the data of these different modalities under clean and noisy conditions, and compared the performance with the multimodal model. In the process of designing the multimodal model, we tried a variety of different fusion strategies and finally chose the fusion method with the best performance. The experimental results show that the performance of the multimodal system is better than that of the single modality, especially in dealing with noise, and the multimodal system can achieve an average improvement of 5%.

Keywords : multimodal, three modalities, RGB-D, identity verification
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