Research,explore and design computer vision/deep learning algorithms for object recognition,face recognition,video analytics,and 3d reconstruction according to marketing requirements.

Research explore and design computer vision and deep learning algorithms according to marketing requirements

1. Participated in face recognition pipeline construction project. Released a new generation of hardware-friendly 1-stage face detection algorithm LFFD and ported it to hardware simulator by transferring it to our deep learning framework and achieving the pre- and post-processing C code. After refactored the model structure and improved the training process, WIDERFACE and FDDB score significantly Increased from the original version. Further, I pruned the face detection model LFFD by editing convolution blocks and released LFFD-Squeeze-BN and LFFD-Tiny-BN. The new version model LFFD-Squeeze-BN keeps almost same performance with LFFD. Used the fusion of convolutional layer and BN to accelerate inference.

2. During this pandemic, released LFFD-Mask by adding facial mask classification attribute into above face detection model LFFD which can classify if the detected face is with mask. This algorithm has been integrated into face recognition pipeline and is now helping SafeEntry system of our office in checking-in and checking-out process.

3. Guided Intern student in License Plate Recognition Project with LFFD-based License Plate Detection and LPRNet-based License Plate Recognition. Modified the structure of LPRNet to adapt it to Singapore license plate structure. (Patent pending)

4. Participated in in the design of API architecture of simulator and semihosted NPUC-CDK for new NPU board of our company.

5. Participated in the project of Low Power Person Detection to refactor and reproduce outsource TFLite model to Tensorflow, and convert it into Pytorch. Further, built the data annotation pipeline to deal with massive internal data for training and evaluation.

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