WENSHUANG SONG

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🎓 EDUCATION

Renmin University of China   2013.09 – 2017.06
Business Management,Bachelor

👥 EXPERIENCE

CASIA   2019.01 – 2019.08
Deep Learning Algorithm Engineer

- Responsible for algorithm research and optimization of real-time iris segmentation system;
- Provide algorithm support for face recognition system;
- Complete the implementation and commercialization of the main algorithms.

DeepMotion   2017.06 – 2018.12
Deep Learning Algorithm Engineer

- My research domain is scene understanding and environment perception based on deep learning, including object detection based on vision and LiDAR, scene segmentation and other perceptual tasks;
- Promote the advancement of the state-of-the-art theory and algorithm in the fields of computer vision and deep learning;
- Responsible for the landing and optimization of the algorithm in the actual product.

VR Lab at BUAA   2016.05 – 2017.06
Deep Learning Algorithm Engineer

- My research domain is deep learning on Computer-assisted Diagnosis (CAD);
- Research for the main algorithms in computer vision and deep learning (including face recognition, image classification, detection and segmentation, etc.);
- Complete the implementation and commercialization of the main algorithms.

👥 PROJECT

Real-time Iris Segmentation System

- A multi-task cascaded CNNs based framework was proposed for joint face detection and alignment;
- We adopts E-Net to implement real-time segmentation which requiring low latency.
- Different from existing tasks, we combine attention mechanism and spatial pyramid to extract precise dense features for pixel labeling instead of complicated dilated convolution and artificially designed decoder networks.
- Our proposed approach achieves state-of-the-art performance of average accuracy 94.09%, Mean IOU 93.54%, and average processing time 68.78 FPS;

Scene Segmentation based on 3D point cloud for safe driving

- We present a powerful framework for 3D instance and semantics segmentation on point clouds, with a Pyramid Attention module for semantic segmentation task and added to instance feature matrix;
- We designed an effective decoder module Global Attention for instance segmentation and fused with semantics segmentation matrix;
- Our algorithm can achieve good performance on instance segmentation for various 3D scenes and facilitate the tasks of 3D point clouds segmentation, which can guarantee both scalability and feasibility of commercialization.

Lung Cancer Detection based on 3D U-net with CT images

- We described a two-stage U-Net-like framework for two-class segmentation which can directly make prediction for data with original resolution due to its SRCNN-inspired architecture;
- We adopt a novel attention gate model for CT images that automatically learns to focus on target structures of varying shapes and sizes integrated into standard 3D U-Net model , and trained with a simply weighted dice coecients ;
- The framework we presented consistently improve the prediction performance of state-of-the-art U-Net across different datasets and training sizes while preserving computational efficiency .

Classification of breast cancer cells and nidus detection based on CNN

- Different with atrous convolution and ASPP, we adopt Densely connected Atrous Spatial Pyramid Pooling , that fuse a set of atrous convolutional layers densely while generates multi-scale features that cover a larger scale range densely without increasing the model size;
- In test stage, post-processing is applied to the generated heat-map for further optimization, and OHEM is adopt to false positive excavation, so as to enhance the training set and improve performance;
- Experiments shows that our algorithm can achieve classification accuracy 90.75%, which is of great clinical value.

⚙ SKILLS

- Programming Languages: C,Python,Matlab
- Platform: Linux,Vim
- Frame: Tensorflow,Pytorch,Caffe

♡ RESEARCH RESULTS

Software copyright of Real-time Iris Segmentation System under unrestricted conditions   2019.03

ⓘ COMPETITION

- Kaggle Image Classification Algorithm: classify objects in CIFAR10's 10 natural scenes with an accuracy of 94%;
- AI Hackathon: Facial Expression Recognition Challenge,Facial recognition system designed with an accuracy of 75%;
- DATAHACH: Developed quantitative trading tools in 24 hours , developing strategies with advanced mathematical models and huge historical data, the most commercial value award.