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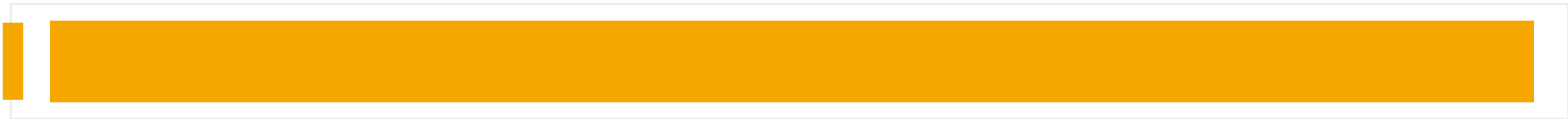


Image De-Raining Using a Conditional Generative Adversarial Network

He Zhang¹, Member, IEEE, Vishwanath Sindagi, Student Member, IEEE,
and Vishal M. Patel², Senior Member, IEEE

Abstract—Severe weather conditions, such as rain and snow, adversely affect the visual quality of images captured under such conditions, thus rendering them useless for further usage and sharing. In addition, such degraded images drastically affect the performance of vision systems. Hence, it is important to address the problem of single image de-raining. However, the inherent ill-posed nature of the problem presents several challenges. We attempt to leverage powerful generative modeling capabilities of the recently introduced conditional generative adversarial networks (CGAN) by enforcing an additional constraint that the de-rained image must be indistinguishable from its corresponding ground truth clean image. The adversarial loss from GAN provides additional regularization and helps to achieve superior results. In addition to presenting a new approach to de-rain images, we introduce a new refined loss function and architectural novelties in the generator–discriminator pair for achieving improved results. The loss function is aimed at reducing artifacts introduced by GANs and ensure better visual quality. The generator sub-network is constructed using the recently introduced densely connected networks, whereas the discriminator is designed to leverage global and local information to decide if an image is real/fake. Based on this, we propose a novel single image de-raining method called image de-raining conditional generative adversarial network (ID-CGAN) that considers quantitative, visual, and also discriminative performance into the objective function. The experiments evaluated on synthetic and real images show that the proposed method outperforms many recent state-of-the-art single image de-raining methods in terms of quantitative and visual performances. Furthermore, the experimental results evaluated on object detection datasets using the Faster-RCNN also demonstrate the effectiveness of proposed method in improving the detection performance on images degraded by rain.



Fig. 1. Sample results of the proposed ID-CGAN method for single image de-raining.

many computer vision algorithms such as tracking, detection and segmentation. This is primarily due to the fact that most of these state-of-the-art algorithms are trained using images that are captured under well-controlled conditions. For example, it can be observed from Fig. 1, that the presence of heavy rain greatly degrade perceptual quality of the image, thus imposing

論文搜尋流程

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步驟二: 利用WOS查找論文

附錄



步驟一



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[Li, Q; Chen, L; \(...\); Kang, Y](#)
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The computational detection of lung lobes from computed tomography in healthcare applications, including emphysema, chronic bronchitis, and asthma, is a challenging task. This paper proposes a novel approach for interactive semi-automated pulmonary lobes segmentation.

2 Deep and machine learning techniques for medical image segmentation
[Houssein, EH; Emam, MM; \(...\); Suganthan, PN](#)
Apr 1 2021 | Feb 2021 (Early Access) | [EXPERT SYSTEMS WITH APPLICATIONS](#)
Breast cancer is the second leading cause of death for women, so accurate and efficient detection allows radiologists to detect abnormalities efficiently. Med

Journal information

INTERNATIONAL JOURNAL OF MACHINE LEARNING AND CYBERNETICS

Publisher name: SPRINGER HEIDELBERG

Journal Impact Factor™

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PRF-RW: a progressive random forest-based random walk approach for interactive semi-automated pulmonary lobes segmentation

By [Li, Q \(Li, Qiang\) \[1\], \[2\]](#); [Chen, L \(Chen, Lei\) \[2\]](#); [Li, XJ \(Li, Xiangju\) \[1\]](#); [Lv, XF \(Lv, Xiaofeng\) \[3\]](#); [Xia, SY \(Xia, Shuyue\) \[4\]](#); [Kang, Y \(Kang, Yan\) \[1\], \[5\]](#)

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Source: [INTERNATIONAL JOURNAL OF MACHINE LEARNING AND CYBERNETICS](#)
Volume: 11 Issue: 10 Page: 2221-2235
DOI: 10.1007/s13042-020-01111-9


Published: OCT 2020
Early Access: MAR 2020
Indexed: 2020-03-13
Document Type: Article
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Abstract: The computational detection of lung lobes from computed tomography images is a challenging segmentation problem with important respiratory healthcare applications, including emphysema, chronic bronchitis, and asthma. This paper proposes a progressive random forest-based random walk approach for interactive semi-automated pulmonary lobes segmentation. First, our model performs automated segmentation of the lung lobes in a progressive random forest network, eliminating the need for prior segmentation of lungs, vessels, or airways. Then, an interactive lobes segmentation approach based on random walk mechanism is designed for improving auto-segmentation accuracy. Furthermore, we annotate a new dataset which contains 93 scans (57 men, 36 women; age range: 40-90 years) from the Central Hospital Affiliated with Shenyang Medical College (CHASMC). We evaluate the model on our annotated dataset. LIDC (<https://wiki.cancerimagingarchive.net>) and LOLA11 (<http://lolall.com/>) datasets. The

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Pattern Recognition Letters
Volume 130, February 2020, Pages 259-266

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[Qingji Guan](#)^{a, b}, [Yaping Huang](#)^a  

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Highlights

- We propose a category-wise residual attention learning framework (CRAL) for multi-label chest X-ray image classification.



附錄



附錄 排除Review及Open Access期刊

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1 **Mask R-CNN** **6,362 Citations**

[He, KM; Gkioxari, G; \(...\); Girshick, R](#) **45 References**

Feb 2020 | [IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE](#) 42 (2), pp.386-397

We present a conceptually simple, flexible, and general framework for object instance segmentation. Our approach efficiently detects objects in an image while simultaneously generating a high-quality segmentation mask for each instance. The method, called Mask R-CNN, extends Faster R-CNN by adding a branch for ... [Show more](#)

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Customized VGG19 Architecture for Pneumonia Detection in Chest X-Rays



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Pneumonia

VGG19 Architecture

Deep-Learning

Ensemble Feature Scheme

審稿紀錄

ABSTRACT

Pneumonia is one of the major illnesses in children and aged humans due to the Infection in the lungs. Early analysis of pneumonia is necessary to prepare for a possible treatment procedure to regulate and cure the disease. This research aspires to develop a Deep-Learning System (DLS) to diagnose the lung abnormality using chest X-ray (radiograph) images. The proposed work is implemented using; (i) Conventional chest radiographs and (ii) Chest radiograph treated with a threshold filter. The initial experimental evaluation is carried out using the traditional DLS, such as AlexNet, VGG16, VGG19 and ResNet50 with a SoftMax classifier. The results confirmed that, VGG19 provides better classification accuracy (86.97%) compared to other methods. Later, a customized VGG19 network is proposed using the Ensemble Feature Scheme (EFS), which combines the handcrafted features attained with CWT, DWT and GLCM with the Deep-Features (DF) achieved using Transfer-Learning (TL) practice. The performance of customized VGG19 is tested using different classifiers such as SVM-linear SVM-RBF KNN classifier Random-Forest

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