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Topic: A lightweight deep learning model for classifying different types of pneumonia

Area: Convolutional Neural Networks, Spatial Pyramid Pooling

Year of Publication: 2020

ABSTRACT

A fast screening method using existing tools such as x-ray and computerized tomography scans can help alleviate the burden of mass diagnosis tests. A chest x-ray is one of the best modalities in diagnosing a pneumonia symptom. A lightweight model is important, as such it allows the model to be deployed on various platforms that include mobile phones, tablets, and normal computers without worrying about the memory storage capacity. The proposed model is based on 14 layers of convolutional neural network with a modified spatial pyramid pooling module. The multiscale ability of the proposed network allows it to identify pneumonia of different types for various severity levels.

References:

1. Siti Raihanah Abdani, Mohd Asyraf Zulkifley, Nuraisyah Hani Zulkifley; A Lightweight Deep Learning Model for COVID-19 Detection; 2020 IEEE Symposium on Industrial Electronics & Applications (ISIEA), 2020

COMMENTS FROM COORDINATOR:

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Topic: Probabilistic mapping of rainfall patterns, using space-borne synthetic aperture radar, for flood alert system

Area: Data Analysis, Probability

Year of Publication: 2020

ABSTRACT

Synthetic aperture radar (SAR) imaging provides an all-weather sensing technique that is suitable for near-real-time mapping of disasters such as floods. We use SAR data acquired by Sentinel-1A/B satellites to investigate a flood event that affected the Indian state of Kerala in August 2018 and 2019. We apply a Bayesian approach to generate probabilistic flood maps, which contain for each pixel its probability to be flooded rather than binary flood information. This probability distribution is used as the basis of a flood alert system that can help people to be removed quickly from areas of potential flood threat.

References:

1. Sonam Futi Sherpa, Manoochehr Shirzaei, Chandrakanta Ojha, Susanna Werth, Renaud Hostache; Probabilistic Mapping of August 2018 Flood of Kerala, India, Using Space-Borne Synthetic Aperture Radar; IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2020

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Topic: A facial expression emotion recognition-based lie detection system

Area: Extreme Learning Machine

Year of Publication: 2017

ABSTRACT

The proposed system is a facial expression emotion recognition-based lie detection system. A facial emotion recognition method based on 2D-Gabor, uniform local binary pattern (LBP) operator, and multiclass extreme learning machine (ELM) classifier is presented, which is applied to real-time facial expression recognition. The recognised facial expression is analysed and classified for lie detection using deep learning techniques. Psychological theories are used for the analysis and classification to determine whether a person is lying or not.

References:

2. Zhentao Liu, Min Wu, Weihua Cao, Luefeng Chen, Jianping Xu, Ri Zhang, Mengtian Zhou, and Junwei Mao; A Facial Expression Emotion Recognition Based Human-robot Interaction System; IEEE/CAA Journal of Automatica Sinica, 2017

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