Road Detection From Aerial Images Matlab Code

Deep Learning based Vehicle Detection in Aerial ImageryDetection in Aerial Images Using Spatial Transformer NetworksRoad Detection in Aerial ImageryMoving Object Detection and Segmentation for Remote Aerial Video SurveillanceShadow Detection in Aerial Images Using Machine LearningDeep Learning Based Vehicle Detection in Aerial ImageryOnboard and Parts-based Object Detection from Aerial ImageryPattern Recognition and Machine IntelligenceObject Detection in High Resolution Aerial Images and Hyperspectral Remote Sensing ImagesImage and GraphicsData ScienceAdvanced Intelligent Computing Technology and ApplicationsDetection of Linear Features in Aerial ImagesEksamensprojektTechnical Abstract BulletinComputer Vision – ECCV 2020 WorkshopsImage and GraphicsRoad tracking and anomaly detection in aerial imageryMulti-modal People Detection from Aerial VideoAerial Object Detection Using Learnable Bounding Boxes Sommer, Lars Wilko Daniel Chianucci N. Flensted-Jensen Teutsch, Michael Prasanna Reddy Pulakurthi Lars Sommer Robert Michael Zaborowski Bhabesh Deka Yilong Liang Zhouchen Lin Gyanendra K. Verma De-Shuang Huang Rui Gao Defense Documentation Center (U.S.) Adrien Bartoli Yuxin Peng SRI International. Artificial Intelligence Center Helen Flynn Aneesh Bhat

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this book proposes a novel deep learning based detection method focusing on vehicle detection in aerial imagery recorded in top view the base detection framework is extended

by two novel components to improve the detection accuracy by enhancing the contextual and semantical content of the employed feature representation to reduce the inference time a lightweight cnn architecture is proposed as base architecture and a novel module that restricts the search area is introduced

many tasks in the field of computer vision rely on an underlying change detection algorithm in images or video sequences although much research has focused on change detection in consumer images there is little work related to change detection on aerial imagery where individual images are recorded from aerial platforms over time this thesis presents two deep learning approaches for detection in aerial images both systems leverage spatial transformer networks stn that identify the coordinate transformation for their localization capabilities the first approach is based on a semisupervised approach which learns to locate changes within a difference image the second is a fully supervised approach which learns to locate and discriminate relevant targets the supervised approach is shown to locate nearly 78 of positive samples with an intersection over union iou criterion of over 0 5 and nearly 94 of positive samples with an iou over 0 3 abstract

unmanned aerial vehicles uavs equipped with video cameras are a flexible support to ensure civil and military safety and security in this thesis a video processing chain is presented for moving object detection in aerial video surveillance a track before detect tbd algorithm is applied to detect motion that is independent of the camera motion novel robust and fast object detection and segmentation approaches improve the baseline tbd and outperform current state of the art methods

shadows are present in a wide range of aerial images from forested scenes to urban environments the presence of shadows degrades the performance of computer vision algorithms in a diverse set of applications such as image registration object segmentation object detection and recognition therefore detection and mitigation of shadows is of paramount importance and can significantly improve the performance of computer vision algorithms in the aforementioned applications there are several existing approaches to shadow detection in aerial images including chromaticity methods texture based methods geometric physics based methods and approaches using neural networks in machine learning in this thesis we developed seven new approaches to shadow detection in aerial imagery this includes two new chromaticity based methods i e shadow detection using blue illumination sdbi and edge based shadow detection using blue illumination edge sdbi and five machine learning methods consisting of two neural networks sdnn and div nn and three convolutional neural networks vskcnn sdcnn ver1 and sdcnn ver 2 these algorithms were applied to five different aerial imagery data sets results were assessed using both qualitative visual shadow masks and quantitative techniques conclusions touch upon the various trades between these approaches including speed training accuracy completeness correctness and quality abstract

the almost endless amount of full motion video fmv data collected by unmanned aerial vehicles uav and similar sources presents mounting challenges to human analysts particularly to their sustained attention to detail despite the monotony of continuous review this digital deluge of raw imagery also places unsustainable loads on the limited resource of network bandwidth automated analysis onboard the uav allows transmitting only pertinent portions of the imagery reducing bandwidth usage and mitigating operator fatigue further target detection and tracking information that is immediately available to the uav facilitates more autonomous operations with reduced communication needs to the ground station experimental results proved the utility of our onboard detection system a through bandwidth reduction by two orders of magnitude and b through reduced operator workload additionally a novel parts based detection method was developed a whole object detector is not well suited for deformable and articulated objects and susceptible to failure due to partial occlusions parts detection with a subsequent structural model overcomes these difficulties is potentially more computationally efficient smaller resource footprint and able to be decomposed into a hierarchy and permits reuse for multiple object types our parts based vehicle detector achieved detection accuracy comparable to whole object detection yet exhibiting said advantages

the two volume set of lncs 11941 and 11942 constitutes the refereed proceedings of the 8th international conference on pattern recognition and machine intelligence premi 2019 held in tezpur india in december 2019 the 131 revised full papers presented were carefully reviewed and selected from 341 submissions they are organized in topical sections named pattern recognition machine learning deep learning soft and evolutionary computing image processing medical image processing bioinformatics and biomedical signal processing information retrieval remote sensing signal and video processing and smart and intelligent sensors

with rapid developments in satellite and sensor technologies there has been a dramatic increase in the availability of remotely sensed images however the exploration of these images still involves a tremendous amount of human interventions which are tedious time consuming and inefficient to help imaging experts gain a complete understanding of the images and locate the objects of interest in a more accurate and efficient way there is always an urgent need for developing automatic detection algorithms in this work we delve into the object detection problems in remote sensing applications exploring the detection algorithms for both hyperspectral images hsis and high resolution aerial images in the first part we focus on the subpixel target detection problem in hsis with low spatial resolutions where the objects of interest are much smaller than the image pixel spatial resolution to this end we explore the detection frameworks that integrate image segmentation techniques in designing the matched filters mfs in particular we propose a novel image segmentation algorithm to identify the spatial spectral coherent image regions from which the background statistics were estimated for deriving the mfs extensive experimental studies were carried out to

demonstrate the advantages of the proposed subpixel target detection framework our studies show the superiority of the approach when comparing to state of the art methods the second part of the thesis explores the object based image analysis obia framework for geospatial object detection in high resolution aerial images specifically we generate a tree representation of the aerial images from the output of hierarchical image segmentation algorithms and reformulate the object detection problem into a tree matching task we then proposed two tree matching algorithms for the object detection framework we demonstrate the efficiency and effectiveness of the proposed tree matching based object detection framework in the third part we study object detection in high resolution aerial images from a machine learning perspective we investigate both traditional machine learning based framework and end to end convolutional neural network cnn based approach for various object detection tasks in the traditional detection framework we propose to apply the gaussian process classifier gpc to train an object detector and demonstrate the advantages of the probabilistic classification algorithm in the cnn based approach we proposed a novel scale transfer module that generates enhanced feature maps for object detection our results show the efficiency and competitiveness of the proposed algorithms when compared to state of the art counterparts abstract

the five volume set constitutes the proceedings of the 13th international conference on image and graphics icig 2025 held in xuzhou china during october 31 november 2 2025

this book targets an audience with a basic understanding of deep learning its architectures and its application in the multimedia domain background in machine learning is helpful in exploring various aspects of deep learning deep learning models have a major impact on multimedia research and raised the performance bar substantially in many of the standard evaluations moreover new multi modal challenges are tackled which older systems would not have been able to handle however it is very difficult to comprehend let alone guide the process of learning in deep neural networks there is an air of uncertainty about exactly what and how these networks learn by the end of the book the readers will have an understanding of different deep learning approaches models pre trained models and familiarity with the implementation of various deep learning algorithms using various frameworks and libraries

this 13 volume set lncs 14862 14874 constitutes in conjunction with the 6 volume set lnai 14875 14880 and the two volume set lnbi 14881 14882 the refereed proceedings of the 20th international conference on intelligent computing icic 2024 held in tianjin china during august 5 8 2024 the total of 863 regular papers were carefully reviewed and selected from 2189 submissions this year the conference concentrated mainly on the theories and methodologies as well as the emerging applications of intelligent computing its aim was to unify the picture of contemporary intelligent computing techniques as an integral concept that highlights the trends in advanced computational intelligence and bridges theoretical research with applications therefore the theme for this conference was advanced intelligent

computing technology and applications papers that focused on this theme were solicited addressing theories methodologies and applications in science and technology

the 6 volume set comprising the lncs books 12535 until 12540 constitutes the refereed proceedings of 28 out of the 45 workshops held at the 16th european conference on computer vision eccv 2020 the conference was planned to take place in glasgow uk during august 23 28 2020 but changed to a virtual format due to the covid 19 pandemic the 249 full papers 18 short papers and 21 further contributions included in the workshop proceedings were carefully reviewed and selected from a total of 467 submissions the papers deal with diverse computer vision topics part iv focusses on advances in image manipulation assistive computer vision and robotics and computer vision for uavs

this three volume set lncs 12888 12898 and 12890 constitutes the refereed conference proceedings of the 11th international conference on image and graphics icig 2021 held in haikou china in august 2021 the 198 full papers presented were selected from 421 submissions and focus on advances of theory techniques and algorithms as well as innovative technologies of image video and graphics processing and fostering innovation entrepreneurship and networking the conference was postponed due to the covid 19 pandemic

current methods in computer vision and object detection rely heavily on neural networks and deep learning this active area of research is used in applications such as autonomous driving aerial imaging defense and surveillance state of the art object detection methods rely on rectangular shaped horizontal vertical bounding boxes drawn over an object to accurately localize its position such orthogonal bounding boxes ignore object pose resulting in reduced object localization and limiting downstream tasks such as object understanding and tracking to overcome these limitations this research presents object detection improvements that aid tighter and more precise detections in particular we modify the object detection anchor box definition to firstly include rotations along with height and width and secondly to allow arbitrary four corner point shapes further the introduction of new anchor boxes gives the model additional freedom to model objects which are centered about a 45 degree axis of rotation the resulting network allows minimum compromises in speed and reliability while providing more accurate localization we present results on the dota dataset showing the value of the flexible object boundaries especially with rotated and non rectangular objects abstract

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