

Deep Learning

Distance Estimation

Inverse Perspective Mapping

KITTI

Real-Time

State Of The Art

Radar

Obstacle Avoidance

Root Mean Squared Error

nuScenes

25 Citations



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Object Distance Estimation from a Single Moving Camera for Advanced Driver Assistance System

Anurag Thombre

A. Rai

Lalit Dumka

Amit Agarwal

Engineering, Computer Science ·

2024 IEEE International Conference on Electronics... · 2024

TLDR This study attempts to democratize ADAS usage in the vehicle industry by adopting the vision-only approach, thereby making it affordable and promising results for the proposed image-based depth estimation with error correction model. [Expand](#)

1 Excerpt Save

Ultra-Fast Visible Lane Distance Estimation Using a Single Camera

M. Galinski

Volodymyr Danylov

Peter Lehoczky

Rastislav Bencel

Lukas Soltes

Engineering, Computer Science · [IEEE Access](#) · 2024

TLDR A method for real-time estimation of visible lane distance based on image data only from a single camera and an existing road lane marking estimation system that underscores the potential of this approach for advanced driver assistance systems (ADAS) in various aspects, such as safe driving speeds, obstacle avoidance, or collision prevention. [Expand](#)

1

Highly Influenced

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An Efficient Approach to Monocular Depth Estimation for Autonomous Vehicle Perception Systems

Mehrnaz Farokhnejad Afshar

Z. Shirmohammadi

Seyyed Amir Ali Ghafourian Ghahramani

Azadeh Noorparvar

A. Hemmatyar

Computer Science, Engineering · [Sustainability](#) · 2023

TLDR Monocular depth estimation is used as a low-cost, data-driven strategy for approximating depth from an RGB image and outperforms current state-of-the-art approaches that only use the detected vehicle's height to determine depth. [Expand](#)

4

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Lane detection using lane boundary marker network with road geometry constraints

H. Khan

Afsheen Rafaqat Ali

Ali Hassan

Ahmed Ali

Wajahat Kazmi

Aamer Zaheer

Computer Science, Engineering · [2020 IEEE Winter Conference on Applications of...](#) · 2020

TLDR This paper uses a lane boundary marker network to detect keypoints along the lane boundaries and proves the algorithm's robustness against both occluded and missing lanes cases and shows that the algorithm can be combined with other lane detectors to improve their lane retrieval potential.[Expand](#)

👤 12

PDF

☰ 1 Excerpt

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Vehicle Distance Estimation Based on Stereo Camera System with Implementation on a Real ADAS Board

Marko Miljković

M. Vranješ

David Mijic

M. Dukic

Engineering, Computer Science ·

[2022 International Conference on Software...](#) · 2022

TLDR A solution that determines the distance of a detected vehicle using a stereo image pair which is implemented on a real ADAS embedded platform (ADAS board) and implements Fast Global Smoothing filter with guidance over the disparity map, which smooths disparity map surfaces that represent the same object of the scene, while preserving its edges.[Expand](#)

👤 2

☰ 2 Excerpts

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Improved and Efficient Inter-Vehicle Distance Estimation Using Road Gradients of Both Ego and Target Vehicles

M. Back

Jinkyu Lee

Kyuho Bae

S. Hwang

Il Yong Chun

Engineering, Computer Science ·

[2021 IEEE International Conference on Autonomous...](#) · 2021

TLDR An inter-vehicle distance estimation framework that can consider slope changes of a road forward, by estimating road gradients of ego vehicle and target vehicles and using a 2D object detection deep net is proposed.[Expand](#)

👤 1

📄 [PDF]

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A Roadside Precision Monocular Measurement Technology for Vehicle-to-Everything (V2X)

Peng Sun

Xingyu Qi

Ruofei Zhong

Engineering, Computer Science · [Sensors](#) · 2024

TLDR This study proposes an automated vehicle distance detection and warning scheme based on camera video streams that utilizes edge computing units for intelligent processing and neural network models for object recognition, thereby enabling V2X driving at holographic intersections.[Expand](#)

PDF

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Collision Avoidance and Direction Planning for Autonomous Vehicles

Nithish Kumar Gannaram

J. Nayak

Sudarsi Mahesh

P. Anil

Vamsi Chikkala

Nitin Kumar

Engineering, Computer Science · [Journal of Physics: Conference Series](#) · 2022

TLDR The deep learning algorithms and techniques necessary to make a reliable and real-time collision avoidance system using concepts such as Convolutional Neural Networks, YOLOv4 (You Look Only Once), and other deep learning architectures while also reviewing the current state of the art strategies for Advanced Driver Assistance System (ADAS).[Expand](#)

📄 PDF

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Real Time Vision Based Overtaking Assistance System for Drivers at Night on Two-Lane Single Carriageway

Gouranga Mandal

Diptendu Bhattacharya

Parthasarathi De

Engineering, Computer Science ·

[Computación y Sistemas](#) · 2021

TLDR An effective solution has been presented to assist a driver in taking decisions for overtaking under adverse night-time dark condition on a two-lane single-carriageway road and achieves a great accuracy over the state-of-the-art techniques using a low-cost 2D camera.[Expand](#)



2

≡ 1 Excerpt

■ Save

A Hybrid Framework for Object Distance Estimation using a Monocular Camera

Vaibhav Patel

Varun Mehta

M. Bolic

I. Mantegh

Computer Science ·

2023 IEEE/AIAA 42nd Digital Avionics Systems... · 2023

TLDR This paper proposes a hybrid monocular distance estimation framework that consists of You Look Only Once version 7 (YOLOv7) algorithm for visual object detection and linear regression model for distance estimation and validated this framework on the authors' field dataset.[Expand](#)



2

≡ 1 Excerpt

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2

3



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Lane detection using lane boundary marker network with road geometry constraints

H. Khan

Afsheen Rafaqat Ali

Ali Hassan

Ahmed Ali

Wajahat Kazmi

Aamer Zaheer

Computer Science, Engineering · IEEE Workshop/Winter Conference on Applications... · 2020

TLDR This paper uses a lane boundary marker network to detect keypoints along the lane boundaries and proves the algorithm's robustness against both occluded and missing lanes cases and shows that the algorithm can be combined with other lane detectors to improve their lane retrieval potential.[Expand](#)



12

PDF

≡ 2 Excerpts

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Robust Range Estimation with a Monocular Camera for Vision-Based Forward Collision Warning System

Ki-Yeong Park

Sun-Young Hwang

Computer Science, Engineering · TheScientificWorldJournal · 2014

TLDR A range estimation method for vision-based forward collision warning systems with a monocular camera to solve the problem of variation of camera pitch angle due to vehicle motion and road inclination provides robust results both in highway and in urban traffic environments.[Expand](#)



44

[PDF]

≡ 1 Excerpt

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Vision meets robotics: The KITTI dataset

Andreas Geiger

Philip Lenz

C. Stiller

R. Urtasun

Engineering, Computer Science · Int. J. Robotics Res. · 2013

TLDR A novel dataset captured from a VW station wagon for use in mobile robotics and autonomous driving research, using a variety of sensor modalities such as high-resolution color and grayscale stereo cameras and a high-precision GPS/IMU inertial navigation system.[Expand](#)

8,190

PDF

2 Excerpts

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CS 229 Final Project : Single Image Depth Estimation From Predicted Semantic Labels

Beyang Liu

Computer Science · 2009

TLDR This work uses a learned multi-class image labeling MRF to estimate the semantic class for each pixel in an image and incorporates these predictions in a Markov random field that includes semantic-aware reconstruction priors such as smoothness and orientation.[Expand](#)

495

PDF

1 Excerpt

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Unsupervised Learning of Monocular Depth Estimation and Visual Odometry with Deep Feature Reconstruction

Huangying Zhan

Ravi Garg

C. Weerasekera

Kejie Li

Harsh Agarwal

I. Reid

Computer Science, Engineering · 2018 IEEE/CVF Conference on Computer Vision and... · 2018

TLDR The use of stereo sequences for learning depth and visual odometry enables the use of both spatial and temporal photometric warp error, and constrains the scene depth and camera motion to be in a common, real-world scale.[Expand](#)

612

[PDF]

2 Excerpts

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Fast Automatic Single-View 3-d Reconstruction of Urban Scenes

O. Barinova

V. Konushin

A. Yakubenko

KeeChang Lee

Hwasup Lim

A. Konushin

Computer Science, Engineering · [European Conference on Computer Vision](#) · 2008

TLDR The goal is to efficiently create 3-d models which are visually pleasant and achieve computational efficiency by special preprocessing together with stepwise search of 3-d model parameters dividing the problem into two smaller sub-problems on chain graphs.[Expand](#)

94

PDF

1 Excerpt

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GeoNet: Unsupervised Learning of Dense Depth, Optical Flow and Camera Pose

Zhichao Yin

Jianping Shi

Computer Science, Engineering · 2018 IEEE/CVF Conference on Computer Vision and... ·

2018

TLDR An adaptive geometric consistency loss is proposed to increase robustness towards outliers and non-Lambertian regions, which resolves occlusions and texture ambiguities effectively and achieves state-of-the-art results in all of the three tasks, performing better than previously unsupervised methods and comparably with supervised ones.[Expand](#)

1,092

[PDF]

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3D Metric Rectification using Angle Regularity

Aamer Zaheer

Sohaib Khan

Computer Science, Engineering · IEEE Winter Conference on Applications of... · 2014

TLDR Automatic Metric Rectification of projectively distorted 3D structures for man-made scenes using Angle Regularity is proposed and is highly robust to the amount of projective distortion, the number of outliers and noise in structure recovery.[Expand](#)

2

1 Excerpt

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Learning Depth from Single Monocular Images

[Ashutosh Saxena](#)[Sung H. Chung](#)[A. Ng](#)[Computer Science](#) · [Neural Information Processing Systems](#) · 2005

TLDR This work begins by collecting a training set of monocular images (of unstructured outdoor environments which include forests, trees, buildings, etc.) and their corresponding ground-truth depthmaps, and applies supervised learning to predict the depthmap as a function of the image. [Expand](#)

 1,152[PDF](#) 1 Excerpt Save

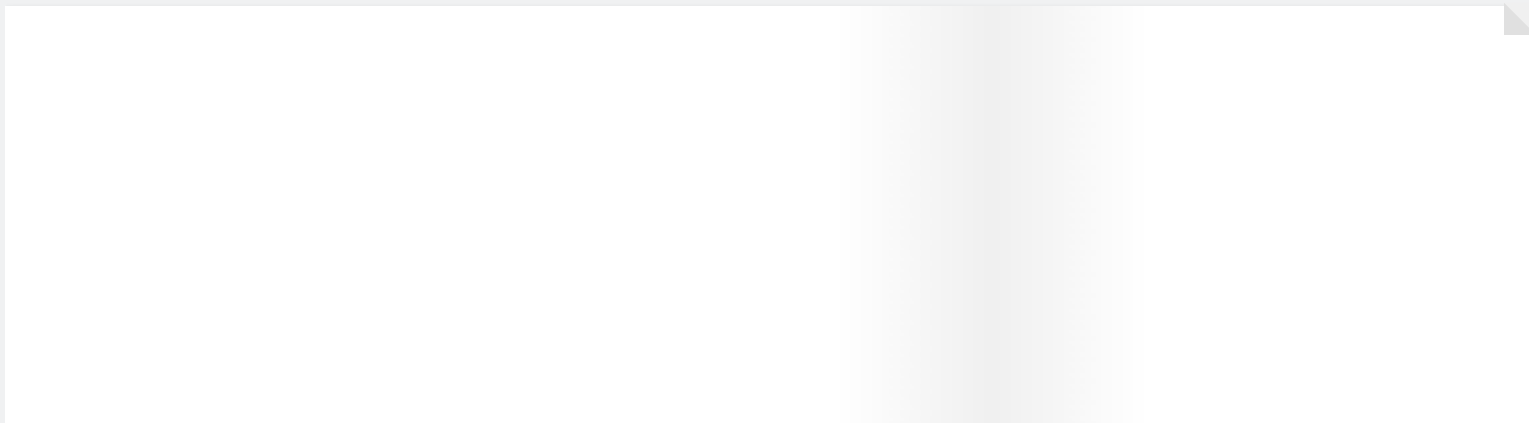
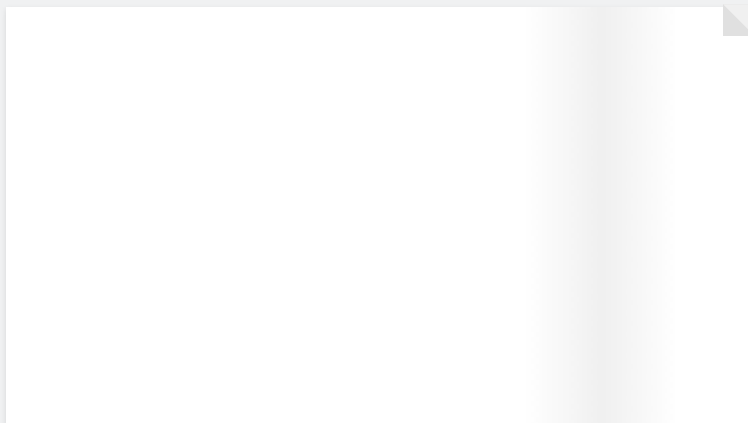
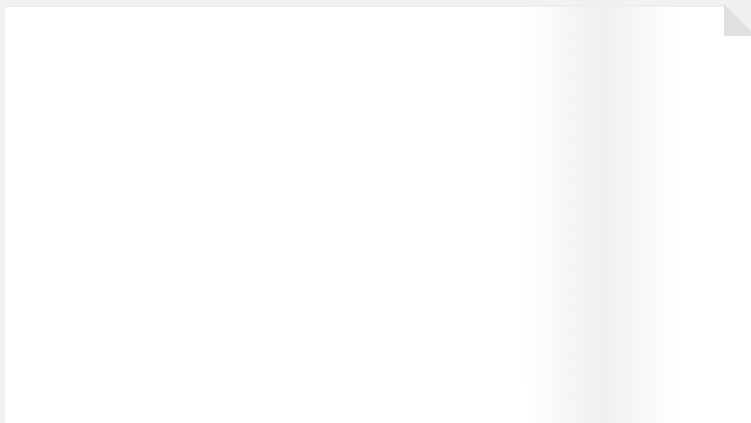
Depth and surface normal estimation from monocular images using regression on deep features and hierarchical CRFs

[Bo Li](#)[Chunhua Shen](#)[Yuchao Dai](#)[A. Hengel](#)[Mingyi He](#)[Computer Science](#) ·[Computer Vision and Pattern Recognition](#) · 2015

TLDR This paper tackles this challenging and essentially underdetermined problem by regression on deep convolutional neural network (DCNN) features, combined with a post-processing refining step using conditional random fields (CRF). [Expand](#)

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