Opencv Car Detection

Learning OpenCV 4 Computer Vision with Python 3
Entertaining the Whole World
Car Detection in Low Frame-rate Aerial Imagery of Dense Urban Areas
International Conference on Advanced Intelligent Systems for Sustainable Development (AI2SD'2023)
Advances in Signal Processing and Intelligent Recognition Systems
OpenCV Essentials
Performance Improvement of PV-RCNN with Auxiliary Information for 3D Car Detection
2020 17th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE)
Intelligent Computing
Smart and Sustainable Intelligent Systems
Deep Learning based Vehicle Detection in Aerial Imagery
Multiple Vehicle Detection and Tracking in Hard Real-time
In-Depth Tutorials: Deep Learning Using Scikit-Learn, Keras, and TensorFlow with Python GUI
Transactions on Large-Scale Data- and Knowledge-Centered Systems XLVII
2020 12th International Conference on

Electronics, Computers and Artificial Intelligence (ECAI)
Object Detection and Tracking in Images and Point Clouds
Information Science and Applications 2018
OpenCV 3 Blueprints
Knowledge Science, Engineering and Management
Practical OpenCV
Project-Based Approach On DEEP LEARNING Using Scikit-Learn, Keras, And TensorFlow with Python GUI
Ambient Diagnostics
Qt 5 and OpenCV 4 Computer Vision Projects
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Theory and Practice of Computation
Using Covariance Matrices as Feature Descriptors for Vehicle Detection from a Fixed Camera
Deep Learning Based Vehicle Detection in Aerial Imagery
OpenCV 4 for Secret Agents
ICT Systems and Sustainability
Python Tools for Scientists
Computer Vision with Python 3
5th Kuala Lumpur International Conference on Biomedical Engineering 2011
OpenCV 3.0 Computer Vision with Java
OpenCV for Secret Agents
Applied Deep Learning and Computer Vision for Self-Driving Cars
Learning Image Processing with OpenCV

Data Science and Deep Learning Workshop For Scientists and Engineers
Learning to Drive
Image Analysis
Hands-On Vision and Behavior for Self-Driving Cars

AGUILAR HURLEY

Learning OpenCV 4 Computer Vision with Python 3
GRIN Verlag
In this book, implement deep learning on detecting vehicle license plates, recognizing sign language, and detecting surface crack using TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries. In chapter 1, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting vehicle license plates using Car License Plate Detection dataset provided by Kaggle (https://www.kaggle.com/andrewmvd/car-plate-detection/download). To perform license plate detection, these steps are taken: 1. Dataset Preparation: Extract the dataset and organize it into separate folders for images and annotations. The annotations should contain bounding box coordinates for license

plate regions.; 2. Data Preprocessing: Load the images and annotations from the dataset. Preprocess the images by resizing, normalizing, or applying any other necessary transformations. Convert the annotation bounding box coordinates to the appropriate format for training.; 3. Training Data Generation: Divide the dataset into training and validation sets. Generate training data by augmenting the images and annotations (e.g., flipping, rotating, zooming). Create data generators or data loaders to efficiently load the training data.; 4. Model Development: Choose a suitable deep learning model architecture for license plate detection, such as a convolutional neural network (CNN). Use TensorFlow and Keras to develop the model architecture. Compile the model with appropriate loss functions and optimization algorithms.; 5. Model Training: Train the model using the prepared training data. Monitor the training process by tracking metrics like loss and accuracy. Adjust the hyperparameters or model architecture as needed to improve performance.; 6. Model Evaluation: Evaluate the

trained model using the validation set. Calculate relevant metrics like precision, recall, and F1 score. Make any necessary adjustments to the model based on the evaluation results.; 7. License Plate Detection: Use the trained model to detect license plates in new images. Apply any post-processing techniques to refine the detected regions. Extract the license plate regions and further process them if needed. In chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform sign language recognition using Sign Language Digits Dataset. Here are the steps to perform sign language recognition using the Sign Language Digits Dataset: 1. Download the dataset from Kaggle: You can visit the Kaggle Sign Language Digits Dataset page (https://www.kaggle.com/ardamavi/sign-language-digits-dataset) and download the dataset.; 2. Extract the dataset: After downloading the dataset, extract the contents from the downloaded zip file to a suitable location on your local machine.; 3.Load the dataset: The dataset consists of two parts - images and a CSV file containing the corresponding labels. The

images are stored in a folder, and the CSV file contains the image paths and labels.; 4. Preprocess the dataset: Depending on the specific requirements of your model, you may need to preprocess the dataset. This can include tasks such as resizing images, converting labels to numerical format, normalizing pixel values, or splitting the dataset into training and testing sets.; 5. Build a machine learning model: Use libraries such as TensorFlow and Keras to build a sign language recognition model. This typically involves designing the architecture of the model, compiling it with suitable loss functions and optimizers, and training the model on the preprocessed dataset.; 6. Evaluate the model: After training the model, evaluate its performance using appropriate evaluation metrics. This can help you understand how well the model is performing on the sign language recognition task.; 7. Make predictions: Once the model is trained and evaluated, you can use it to make predictions on new sign language images. Pass the image through the model, and it will predict the corresponding sign language digit. In chapter 3, you will learn how

to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting surface crack using Surface Crack Detection provided by Kaggle (https://www.kaggle.com/arunrk7/surface-crack-detection/download). Here's a general outline of the process: Data Preparation: Start by downloading the dataset from the Kaggle link you provided. Extract the dataset and organize it into appropriate folders (e.g., training and testing folders).; Import Libraries: Begin by importing the necessary libraries, including TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, and NumPy.; Data Loading and Preprocessing: Load the images and labels from the dataset. Since the dataset may come in different formats, it's essential to understand its structure and adjust the code accordingly. Use OpenCV to read the images and Pandas to load the labels.; Data Augmentation: Perform data augmentation techniques such as rotation, flipping, and scaling to increase the diversity of the training data and prevent overfitting. You can use the ImageDataGenerator class from Keras for

this purpose.; Model Building: Define your neural network architecture using the Keras API with TensorFlow backend. You can start with a simple architecture like a convolutional neural network (CNN). Experiment with different architectures to achieve better performance.; Model Compilation: Compile your model by specifying the loss function, optimizer, and evaluation metric. For a binary classification problem like crack detection, you can use binary cross-entropy as the loss function and Adam as the optimizer.; Model Training: Train your model on the prepared dataset using the fit() method. Split your data into training and validation sets using train_test_split() from Scikit-Learn. Monitor the training progress and adjust hyperparameters as needed. Model Evaluation: Evaluate the performance of your trained model on the test set. Use appropriate evaluation metrics such as accuracy, precision, recall, and F1 score. Scikit-Learn provides functions for calculating these metrics.; Model Prediction: Use the trained model to predict crack detection on new unseen images. Load the test images, preprocess them if

necessary, and use the trained model to make predictions.

Entertaining the Whole World

Springer Science & Business Media

The world is experiencing an unprecedented period of change and growth through all the electronic and technilogical developments and everyone on the planet has been impacted. What was once ‘science fiction’, today it is a reality. This book explores the world of many of once unthinkable advancements by explaining current technologies in great detail. Each chapter focuses on a different aspect - Machine Vision, Pattern Analysis and Image Processing - Advanced Trends in Computational Intelligence and Data Analytics - Futuristic Communication Technologies - Disruptive Technologies for Future Sustainability. The chapters include the list of topics that spans all the areas of smart intelligent systems and computing such as: Data Mining with Soft Computing, Evolutionary Computing, Quantum Computing, Expert Systems, Next Generation Communication, Blockchain and Trust Management, Intelligent Biometrics, Multi-Valued Logical Systems, Cloud Computing and security etc. An

extensive list of bibliographic references at the end of each chapter guides the reader to probe further into application area of interest to him/her. Car Detection in Low Frame-rate Aerial Imagery of Dense Urban Areas Springer Nature Unleash the power of computer vision with Python to carry out image processing and computer vision techniquesAbout This Book* Learn how to build a full-fledged image processing application using free tools and libraries* Perform basic to advanced image and video stream processing with OpenCV's Python APIs* Understand and optimize various features of OpenCV with the help of easy-to-grasp examplesWho This Book Is ForThis book is for Python developers who want to perform image processing. It's ideal for those who want to explore the field of computer vision, and design and develop computer vision applications using Python. The reader is expected to have basic knowledge of Python.What You Will Learn* Working with open source libraries such Pillow, Scikit-image, and OpenCV* Writing programs such as edge detection, color processing, image feature

extraction, and more* Implementing feature detection algorithms like LBP and ORB* Tracking objects using an external camera or a video file* Optical Character Recognition using Machine Learning.* Understanding Convolutional Neural Networks to learn patterns in images* Leveraging Cloud Infrastructure to provide Computer Vision as a ServiceIn DetailThis book is a thorough guide for developers who want to get started with building computer vision applications using Python 3. The book is divided into five sections: The Fundamentals of Image Processing, Applied Computer Vision, Making Applications Smarter,Extending your Capabilities using OpenCV, and Getting Hands on. Throughout this book, three image processing libraries Pillow, Scikit-Image, and OpenCV will be used to implement different computer vision algorithms.The book aims to equip readers to build Computer Vision applications that are capable of working in real-world scenarios effectively. Some of the applications that we will look at in the book are Optical Character Recognition, Object Tracking and building a

Computer Vision as a Service platform that works over the internet.Style and approachEach stage of the book elaborates on various concepts and algorithms in image processing/computer vision using Python. This step-by-step guide can be used both as a tutorial and as a reference. *International Conference on Advanced Intelligent Systems for Sustainable Development (AI2SD'2023)* Packt Publishing Ltd This book proposes new technologies and discusses future solutions for ICT design infrastructures , as reflected in high-quality papers presented at the 4th International Conference on ICT for Sustainable Development (ICT4SD 2019), held in Goa, India, on 5–6 July 2019. The conference provided a valuable forum for cutting-edge research discussions among pioneering researchers, scientists, industrial engineers, and students from all around the world. Bringing together experts from different countries, the book explores a range of central issues from an international perspective. *Advances in Signal Processing and Intelligent Recognition Systems* Packt Publishing Ltd This book constitutes the refereed

proceedings of the 18th Scandinavian Conference on Image Analysis, SCIA 2013, held in Espoo, Finland, in June 2013. The 67 revised full papers presented were carefully reviewed and selected from 132 submissions. The papers are organized in topical sections on feature extraction and segmentation, pattern recognition and machine learning, medical and biomedical image analysis, faces and gestures, object and scene recognition, matching, registration, and alignment, 3D vision, color and multispectral image analysis, motion analysis, systems and applications, human-centered computing, and video and multimedia analysis.

OpenCV Essentials
John Wiley & Sons
If you are a competent C++ programmer and want to learn the tricks of image processing with OpenCV, then this book is for you. A basic understanding of image processing is required.

Performance Improvement of PV-RCNN with Auxiliary Information for 3D Car Detection
Springer Nature
The LNCS journal Transactions on Large-Scale Data- and Knowledge-Centered Systems focuses on data management,

knowledge discovery, and knowledge processing, which are core and hot topics in computer science. Since the 1990s, the Internet has become the main driving force behind application development in all domains. An increase in the demand for resource sharing across different sites connected through networks has led to an evolution of data- and knowledge-management systems from centralized systems to decentralized systems enabling large-scale distributed applications providing high scalability. This, the 47th issue of Transactions on Large-Scale Data- and Knowledge-Centered Systems, constitutes a special issue focusing on Digital Ecosystems and Social Networks. The 9 revised selected papers cover topics that include Social Big Data, Data Analysis, Cloud-Based Feedback, Experience Ecosystems, Pervasive Environments, and Smart Systems. *2020 17th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE)* Packt Publishing Ltd OpenCV 3.0 Computer Vision with Java is a practical tutorial guide that explains fundamental tasks from computer vision while focusing on Java development. This book will

teach you how to set up OpenCV for Java and handle matrices using the basic operations of image processing such as filtering and image transforms. It will also help you learn how to use Haar cascades for tracking faces and to detect foreground and background regions with the help of a Kinect device. It will even give you insights into server-side OpenCV. Each chapter is presented with several projects that are ready to use. The functionality of these projects is found in many classes that allow developers to understand computer vision principles and rapidly extend or customize the projects for their needs.

Intelligent Computing
Springer Nature
An introduction to the Python programming language and its most popular tools for scientists, engineers, students, and anyone who wants to use Python for research, simulations, and collaboration. Python Tools for Scientists will introduce you to Python tools you can use in your scientific research, including Anaconda, Spyder, Jupyter Notebooks, JupyterLab, and numerous Python libraries. You'll learn to use Python for tasks such as creating visualizations,

representing geospatial information, simulating natural events, and manipulating numerical data. Once you've built an optimal programming environment with Anaconda, you'll learn how to organize your projects and use interpreters, text editors, notebooks, and development environments to work with your code. Following the book's fast-paced Python primer, you'll tour a range of scientific tools and libraries like scikit-learn and seaborn that you can use to manipulate and visualize your data, or analyze it with machine learning algorithms. You'll also learn how to: Create isolated projects in virtual environments, build interactive notebooks, test code in the Qt console, and use Spyder's interactive development features Use Python's built-in data types, write custom functions and classes, and document your code Represent data with the essential NumPy, Matplotlib, and pandas libraries Use Python plotting libraries like Plotly, HoloViews, and Datashader to handle large datasets and create 3D visualizations Regardless of your scientific field, Python Tools for Scientists will show you how to choose the

best tools to meet your research and computational analysis needs. **Smart and Sustainable Intelligent Systems** No Starch Press Create image processing, object detection and face recognition apps by leveraging the power of machine learning and deep learning with OpenCV 4 and Qt 5 Key FeaturesGain practical insights into code for all projects covered in this bookUnderstand modern computer vision concepts such as character recognition, image processing and modificationLearn to use a graphics processing unit (GPU) and its parallel processing power for filtering images quicklyBook Description OpenCV and Qt have proven to be a winning combination for developing cross-platform computer vision applications. By leveraging their power, you can create robust applications with both an intuitive graphical user interface (GUI) and high-performance capabilities. This book will help you learn through a variety of real-world projects on image processing, face and text recognition, object detection, and high-performance computing. You'll be able to progressively build on your skills by working on projects of

increasing complexity. You'll begin by creating an image viewer application, building a user interface from scratch by adding menus, performing actions based on key-presses, and applying other functions. As you progress, the book will guide you through using OpenCV image processing and modification functions to edit an image with filters and transformation features. In addition to this, you'll explore the complex motion analysis and facial landmark detection algorithms, which you can use to build security and face detection applications. Finally, you'll learn to use pretrained deep learning models in OpenCV and GPUs to filter images quickly. By the end of this book, you will have learned how to effectively develop full-fledged computer vision applications with OpenCV and Qt. What you will learnCreate an image viewer with all the basic requirementsConstruct an image editor to filter or transform imagesDevelop a security app to detect movement and secure homesBuild an app to detect facial landmarks and apply masks to facesCreate an app to extract text from scanned documents and photosTrain and use

cascade classifiers and DL models for object detectionBuild an app to measure the distance between detected objectsImplement high-speed image filters on GPU with Open Graphics Library (OpenGL)Who this book is for This book is for engineers and developers who are familiar with both Qt and OpenCV frameworks and are capable of creating simple projects using them, but want to build their skills to create professional-level projects using them. Familiarity with the C++ language is a must to follow the example source codes in this book. *Deep Learning based Vehicle Detection in Aerial Imagery* Springer Nature Seminar paper from the year 2006 in the subject Computer Science - Applied, grade: A, Boston University, course: Digital Image Processing and Communication, - entries in the bibliography, language: English, abstract: A method is developed to distinguish between cars and trucks present in a video feed of a highway. The method builds upon previously done work using covariance matrices as an accurate descriptor for regions. Background subtraction and other similar proven

image processing techniques are used to identify the regions where the vehicles are most likely to be, and a distance metric comparing the vehicle inside the region to a fixed library of vehicles is used to determine the class of vehicle. *Multiple Vehicle Detection and Tracking in Hard Real-time* Springer This book comprises the refereed proceedings of the Workshop on Computation: Theory and Practice (WCTP)–2012, held in Manila, The Philippines, in September 2012. The workshop was organized by the Tokyo Institute of Technology, the Institute of Scientific and Industrial Research–Osaka University, the University of the Philippines Diliman, and De La Salle University–Manila and was devoted to theoretical and practical approaches to computation. The 22 revised full papers presented in this volume were carefully reviewed. They deal with biologically inspired computational modeling, programming language theory, advanced studies in networking, and empathic computing. *In-Depth Tutorials: Deep Learning Using Scikit-Learn, Keras, and TensorFlow with Python GUI* BALIGE PUBLISHING BOOK 1: LEARN FROM SCRATCH MACHINE

LEARNING WITH PYTHON GUI In this book, you will learn how to use NumPy, Pandas, OpenCV, Scikit-Learn and other libraries to how to plot graph and to process digital image. Then, you will learn how to classify features using Perceptron, Adaline, Logistic Regression (LR), Support Vector Machine (SVM), Decision Tree (DT), Random Forest (RF), and K-Nearest Neighbor (KNN) models. You will also learn how to extract features using Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA), Kernel Principal Component Analysis (KPCA) algorithms and use them in machine learning. In Chapter 1, you will learn: Tutorial Steps To Create A Simple GUI Application, Tutorial Steps to Use Radio Button, Tutorial Steps to Group Radio Buttons, Tutorial Steps to Use CheckBox Widget, Tutorial Steps to Use Two CheckBox Groups, Tutorial Steps to Understand Signals and Slots, Tutorial Steps to Convert Data Types, Tutorial Steps to Use Spin Box Widget, Tutorial Steps to Use ScrollBar and Slider, Tutorial Steps to Use List Widget, Tutorial Steps to Select Multiple List Items in One List Widget and Display It in Another List Widget, Tutorial Steps

to Insert Item into List Widget, Tutorial Steps to Use Operations on Widget List, Tutorial Steps to Use Combo Box, Tutorial Steps to Use Calendar Widget and Date Edit, and Tutorial Steps to Use Table Widget. In Chapter 2, you will learn: Tutorial Steps To Create A Simple Line Graph, Tutorial Steps To Create A Simple Line Graph in Python GUI, Tutorial Steps To Create A Simple Line Graph in Python GUI: Part 2, Tutorial Steps To Create Two or More Graphs in the Same Axis, Tutorial Steps To Create Two Axes in One Canvas, Tutorial Steps To Use Two Widgets, Tutorial Steps To Use Two Widgets, Each of Which Has Two Axes, Tutorial Steps To Use Axes With Certain Opacity Levels, Tutorial Steps To Choose Line Color From Combo Box, Tutorial Steps To Calculate Fast Fourier Transform, Tutorial Steps To Create GUI For FFT, Tutorial Steps To Create GUI For FFT With Some Other Input Signals, Tutorial Steps To Create GUI For Noisy Signal, Tutorial Steps To Create GUI For Noisy Signal Filtering, and Tutorial Steps To Create GUI For Wav Signal Filtering. In Chapter 3, you will learn: Tutorial Steps To Convert RGB Image Into Grayscale, Tutorial Steps To Convert

RGB Image Into YUV Image, Tutorial Steps To Convert RGB Image Into HSV Image, Tutorial Steps To Filter Image, Tutorial Steps To Display Image Histogram, Tutorial Steps To Display Filtered Image Histogram, Tutorial Steps To Filter Image With CheckBoxes, Tutorial Steps To Implement Image Thresholding, and Tutorial Steps To Implement Adaptive Image Thresholding. You will also learn: Tutorial Steps To Generate And Display Noisy Image, Tutorial Steps To Implement Edge Detection On Image, Tutorial Steps To Implement Image Segmentation Using Multiple Thresholding and K-Means Algorithm, Tutorial Steps To Implement Image Denoising, Tutorial Steps To Detect Face, Eye, and Mouth Using Haar Cascades, Tutorial Steps To Detect Face Using Haar Cascades with PyQt, Tutorial Steps To Detect Eye, and Mouth Using Haar Cascades with PyQt, Tutorial Steps To Extract Detected Objects, Tutorial Steps To Detect Image Features Using Harris Corner Detection, Tutorial Steps To Detect Image Features Using Shi-Tomasi Corner Detection, Tutorial Steps To Detect Features Using Scale-

Invariant Feature Transform (SIFT), and Tutorial Steps To Detect Features Using Features from Accelerated Segment Test (FAST). In Chapter 4, In this tutorial, you will learn how to use Pandas, NumPy and other libraries to perform simple classification using perceptron and Adaline (adaptive linear neuron). The dataset used is Iris dataset directly from the UCI Machine Learning Repository. You will learn: Tutorial Steps To Implement Perceptron, Tutorial Steps To Implement Perceptron with PyQt, Tutorial Steps To Implement Adaline (ADAptive LInear NEuron), and Tutorial Steps To Implement Adaline with PyQt. In Chapter 5, you will learn how to use the scikit-learn machine learning library, which provides a wide variety of machine learning algorithms via a user-friendly Python API and to perform classification using perceptron, Adaline (adaptive linear neuron), and other models. The dataset used is Iris dataset directly from the UCI Machine Learning Repository. You will learn: Tutorial Steps To Implement Perceptron Using Scikit-Learn, Tutorial Steps To Implement Perceptron Using Scikit-Learn with PyQt, Tutorial

Steps To Implement Logistic Regression Model, Tutorial Steps To Implement Logistic Regression Model with PyQt, Tutorial Steps To Implement Logistic Regression Model Using Scikit-Learn with PyQt, Tutorial Steps To Implement Support Vector Machine (SVM) Using Scikit-Learn, Tutorial Steps To Implement Decision Tree (DT) Using Scikit-Learn, Tutorial Steps To Implement Random Forest (RF) Using Scikit-Learn, and Tutorial Steps To Implement K-Nearest Neighbor (KNN) Using Scikit-Learn.

In Chapter 6, you will learn how to use Pandas, NumPy, Scikit-Learn, and other libraries to implement different approaches for reducing the dimensionality of a dataset using different feature selection techniques. You will learn about three fundamental techniques that will help us to summarize the information content of a dataset by transforming it onto a new feature subspace of lower dimensionality than the original one. Data compression is an important topic in machine learning, and it helps us to store and analyze the increasing amounts of data that are produced and collected in the modern age of

technology. You will learn the following topics: Principal Component Analysis (PCA) for unsupervised data compression, Linear Discriminant Analysis (LDA) as a supervised dimensionality reduction technique for maximizing class separability, Nonlinear dimensionality reduction via Kernel Principal Component Analysis (KPCA). You will learn: Tutorial Steps To Implement Principal Component Analysis (PCA), Tutorial Steps To Implement Principal Component Analysis (PCA) Using Scikit-Learn, Tutorial Steps To Implement Principal Component Analysis (PCA) Using Scikit-Learn with PyQt, Tutorial Steps To Implement Linear Discriminant Analysis (LDA), Tutorial Steps To Implement Linear Discriminant Analysis (LDA) with Scikit-Learn, Tutorial Steps To Implement Linear Discriminant Analysis (LDA) Using Scikit-Learn with PyQt, Tutorial Steps To Implement Kernel Principal Component Analysis (KPCA) Using Scikit-Learn, and Tutorial Steps To Implement Kernel Principal Component Analysis (KPCA) Using Scikit-Learn with PyQt. In Chapter 7, you will learn how to use Keras, Scikit-Learn, Pandas,

NumPy and other libraries to perform prediction on handwritten digits using MNIST dataset. You will learn: Tutorial Steps To Load MNIST Dataset, Tutorial Steps To Load MNIST Dataset with PyQt, Tutorial Steps To Implement Perceptron With PCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Perceptron With LDA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Perceptron With KPCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Logistic Regression (LR) Model With PCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Logistic Regression (LR) Model With LDA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Logistic Regression (LR) Model With KPCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement , Tutorial Steps To Implement Support Vector Machine (SVM) Model With LDA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Support Vector Machine (SVM) Model With KPCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps

To Implement Decision Tree (DT) Model With PCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Decision Tree (DT) Model With LDA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Decision Tree (DT) Model With KPCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Random Forest (RF) Model With PCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Random Forest (RF) Model With LDA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement Random Forest (RF) Model With KPCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement K-Nearest Neighbor (KNN) Model With PCA Feature Extractor on MNIST Dataset Using PyQt, Tutorial Steps To Implement K-Nearest Neighbor (KNN) Model With LDA Feature Extractor on MNIST Dataset Using PyQt, and Tutorial Steps To Implement K-Nearest Neighbor (KNN) Model With KPCA Feature Extractor on MNIST Dataset Using PyQt. BOOK 2: THE PRACTICAL GUIDES ON DEEP LEARNING USING SCIKIT-LEARN, KERAS, AND TENSORFLOW WITH PYTHON GUI In this book, you will

learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to implement deep learning on recognizing traffic signs using GTSRB dataset, detecting brain tumor using Brain Image MRI dataset, classifying gender, and recognizing facial expression using FER2013 dataset In Chapter 1, you will learn to create GUI applications to display line graph using PyQt. You will also learn how to display image and its histogram. In Chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, Pandas, NumPy and other libraries to perform prediction on handwritten digits using MNIST dataset with PyQt. You will build a GUI application for this purpose. In Chapter 3, you will learn how to perform recognizing traffic signs using GTSRB dataset from Kaggle. There are several different types of traffic signs like speed limits, no entry, traffic signals, turn left or right, children crossing, no passing of heavy vehicles, etc. Traffic signs classification is the process of identifying which class a traffic sign belongs to. In this Python project, you will build a deep neural network model that can classify traffic signs in image into different

categories. With this model, you will be able to read and understand traffic signs which are a very important task for all autonomous vehicles. You will build a GUI application for this purpose. In Chapter 4, you will learn how to perform detecting brain tumor using Brain Image MRI dataset provided by Kaggle (https://www.kaggle.com/navoneel/brain-mri-images-for-brain-tumor-detection) using CNN model. You will build a GUI application for this purpose. In Chapter 5, you will learn how to perform classifying gender using dataset provided by Kaggle (https://www.kaggle.com/cashutosh/gender-classification-dataset) using MobileNetV2 and CNN models. You will build a GUI application for this purpose. In Chapter 6, you will learn how to perform recognizing facial expression using FER2013 dataset provided by Kaggle (https://www.kaggle.com/nicolejyt/facialexpressionrecognition) using CNN model. You will also build a GUI application for this purpose. BOOK 3: STEP BY STEP TUTORIALS ON DEEP LEARNING USING SCIKIT-LEARN, KERAS, AND TENSORFLOW WITH PYTHON GUI In this book, you will

learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to implement deep learning on classifying fruits, classifying cats/dogs, detecting furnitures, and classifying fashion. In Chapter 1, you will learn to create GUI applications to display line graph using PyQt. You will also learn how to display image and its histogram. Then, you will learn how to use OpenCV, NumPy, and other libraries to perform feature extraction with Python GUI (PyQt). The feature detection techniques used in this chapter are Harris Corner Detection, Shi-Tomasi Corner Detector, and Scale-Invariant Feature Transform (SIFT). In Chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform classifying fruits using Fruits 360 dataset provided by Kaggle (https://www.kaggle.com/moltean/fruits/code) using Transfer Learning and CNN models. You will build a GUI application for this purpose. In Chapter 3, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform classifying cats/dogs using dataset

provided by Kaggle (https://www.kaggle.com/chetankv/dogs-cats-images) using Using CNN with Data Generator. You will build a GUI application for this purpose. In Chapter 4, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting furnitures using Furniture Detector dataset provided by Kaggle (https://www.kaggle.com/akkithetechie/furniture-detector) using VGG16 model. You will build a GUI application for this purpose. In Chapter 5, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform classifying fashion using Fashion MNIST dataset provided by Kaggle (https://www.kaggle.com/zalando-research/fashionmnist/code) using CNN model. You will build a GUI application for this purpose. BOOK 4: Project-Based Approach On DEEP LEARNING Using Scikit-Learn, Keras, And TensorFlow with Python GUI In this book, implement deep learning on detecting vehicle license plates, recognizing sign language, and detecting surface crack using TensorFlow, Keras, Scikit-Learn, OpenCV,

Pandas, NumPy and other libraries. In Chapter 1, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting vehicle license plates using Car License Plate Detection dataset provided by Kaggle (https://www.kaggle.com/andrewmvd/car-plate-detection/download). In Chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform sign language recognition using Sign Language Digits Dataset provided by Kaggle (https://www.kaggle.com/ardamavi/sign-language-digits-dataset/download). In Chapter 3, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting surface crack using Surface Crack Detection provided by Kaggle (https://www.kaggle.com/arunrk7/surface-crack-detection/download). BOOK 5: Hands-On Guide To IMAGE CLASSIFICATION Using Scikit-Learn, Keras, And TensorFlow with PYTHON GUI In this book, implement deep learning-based image classification on detecting face mask, classifying

weather, and recognizing flower using TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries. In Chapter 1, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform detecting face mask using Face Mask Detection Dataset provided by Kaggle (https://www.kaggle.com/omkargurav/face-mask-dataset/download). In Chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform how to classify weather using Multi-class Weather Dataset provided by Kaggle (https://www.kaggle.com/pratik2901/multiclass-weather-dataset/download). In Chapter 3, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform how to recognize flower using Flowers Recognition dataset provided by Kaggle (https://www.kaggle.com/alxmamaev/flowers-recognition/download). BOOK 6: Step by Step Tutorial IMAGE CLASSIFICATION Using Scikit-Learn, Keras, And TensorFlow with PYTHON GUI In this book, implement deep learning-

based image classification on classifying monkey species, recognizing rock, paper, and scissor, and classify airplane, car, and ship using TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries. In Chapter 1, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform how to classify monkey species using 10 Monkey Species dataset provided by Kaggle (https://www.kaggle.com/slothkong/10-monkey-species/download). In Chapter 2, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform how to recognize rock, paper, and scissor using 10 Monkey Species dataset provided by Kaggle (https://www.kaggle.com/sanikamal/rock-paper-scissors-dataset/download). In Chapter 3, you will learn how to use TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy and other libraries to perform how to classify airplane, car, and ship using Multiclass-image-dataset-airplane-car-ship dataset provided by Kaggle (https://www.kaggle.com/abtabm/multiclassimagedataset

airplanecar). *Transactions on Large-Scale Data- and Knowledge-Centered Systems XLVII* Springer Practical OpenCV is a hands-on project book that shows you how to get the best results from OpenCV, the open-source computer vision library. Computer vision is key to technologies like object recognition, shape detection, and depth estimation. OpenCV is an open-source library with over 2500 algorithms that you can use to do all of these, as well as track moving objects, extract 3D models, and overlay augmented reality. It's used by major companies like Google (in its autonomous car), Intel, and Sony; and it is the backbone of the Robot Operating System's computer vision capability. In short, if you're working with computer vision at all, you need to know OpenCV. With Practical OpenCV, you'll be able to: Get OpenCV up and running on Windows or Linux. Use OpenCV to control the camera board and run vision algorithms on Raspberry Pi. Understand what goes on behind the scenes in computer vision applications like object detection, image stitching, filtering, stereo vision, and more. Code complex computer

vision projects for your class/hobby/robot/job, many of which can execute in real time on off-the-shelf processors. Combine different modules that you develop to create your own interactive computer vision app. What you'll learn The ins and outs of OpenCV programming on Windows and Linux Transforming and filtering images Detecting corners, edges, lines, and circles in images and video Detecting pre-trained objects in images and video Making panoramas by stitching images together Getting depth information by using stereo cameras Basic machine learning techniques BONUS: Learn how to run OpenCV on Raspberry Pi Who this book is for This book is for programmers and makers with little or no previous exposure to computer vision. Some proficiency with C++ is required. Table of ContentsPart 1: Getting comfortable Chapter 1: Introduction to Computer Vision and OpenCV Chapter 2: Setting up OpenCV on your computer Chapter 3: CV Bling – OpenCV inbuilt demos Chapter 4: Basic operations on images and GUI windows Part 2: Advanced computer vision problems and coding them in OpenCV

Chapter 5: Image filtering Chapter 6: Shapes in images Chapter 7: Image segmentation and histograms Chapter 8: Basic machine learning and keypoint-based object detection Chapter 9: Affine and Perspective transformations and their applications to image panoramas Chapter 10: 3D geometry and stereo vision Chapter 11: Embedded computer vision: Running OpenCV programs on the Raspberry Pi *2020 12th International Conference on Electronics, Computers and Artificial Intelligence (ECAI)* KIT Scientific Publishing A practical guide to learning visual perception for self-driving cars for computer vision and autonomous system engineers Key FeaturesExplore the building blocks of the visual perception system in self-driving carsIdentify objects and lanes to define the boundary of driving surfaces using open-source tools like OpenCV and PythonImprove the object detection and classification capabilities of systems with the help of neural networksBook Description The visual perception capabilities of a self-driving car are powered by computer vision. The work relating to self-driving cars can be broadly classified into

three components - robotics, computer vision, and machine learning. This book provides existing computer vision engineers and developers with the unique opportunity to be associated with this booming field. You will learn about computer vision, deep learning, and depth perception applied to driverless cars. The book provides a structured and thorough introduction, as making a real self-driving car is a huge cross-functional effort. As you progress, you will cover relevant cases with working code, before going on to understand how to use OpenCV, TensorFlow and Keras to analyze video streaming from car cameras. Later, you will learn how to interpret and make the most of lidars (light detection and ranging) to identify obstacles and localize your position. You'll even be able to tackle core challenges in self-driving cars such as finding lanes, detecting pedestrian and crossing lights, performing semantic segmentation, and writing a PID controller. By the end of this book, you'll be equipped with the skills you need to write code for a self-driving car running in a driverless car simulator, and be able to tackle various challenges faced by

autonomous car engineers. What you will learnUnderstand how to perform camera calibrationBecome well-versed with how lane detection works in self-driving cars using OpenCVExplore behavioral cloning by self-driving in a video-game simulatorGet to grips with using lidarsDiscover how to configure the controls for autonomous vehiclesUse object detection and semantic segmentation to locate lanes, cars, and pedestriansWrite a PID controller to control a self-driving car running in a simulatorWho this book is for This book is for software engineers who are interested in learning about technologies that drive the autonomous car revolution. Although basic knowledge of computer vision and Python programming is required, prior knowledge of advanced deep learning and how to use sensors (lidar) is not needed.

Object Detection and Tracking in Images and Point Clouds Packt Publishing Ltd

Delve into practical computer vision and image processing projects and get up to speed with advanced object detection techniques and machine learning algorithms Key FeaturesDiscover best practices for

engineering and maintaining OpenCV projectsExplore important deep learning tools for image classificationUnderstand basic image matrix formats and filtersBook Description OpenCV is one of the best open source libraries available and can help you focus on constructing complete projects on image processing, motion detection, and image segmentation. This Learning Path is your guide to understanding OpenCV concepts and algorithms through real-world examples and activities. Through various projects, you'll also discover how to use complex computer vision and machine learning algorithms and face detection to extract the maximum amount of information from images and videos. In later chapters, you'll learn to enhance your videos and images with optical flow analysis and background subtraction. Sections in the Learning Path will help you get to grips with text segmentation and recognition, in addition to guiding you through the basics of the new and improved deep learning modules. By the end of this Learning Path, you will have mastered commonly used computer vision techniques to

build OpenCV projects from scratch. This Learning Path includes content from the following Packt books: Mastering OpenCV 4 - Third Edition by Roy Shilkrot and David Millán EscriváLearn OpenCV 4 By Building Projects - Second Edition by David Millán Escrivá, Vinícius G. Mendonça, and Prateek JoshiWhat you will learnStay up-to-date with algorithmic design approaches for complex computer vision tasksWork with OpenCV's most up-to-date API through various projectsUnderstand 3D scene reconstruction and Structure from Motion (SfM)Study camera calibration and overlay augmented reality (AR) using the ArUco moduleCreate CMake scripts to compile your C++ applicationExplore segmentation and feature extraction techniquesRemove backgrounds from static scenes to identify moving objects for surveillanceWork with new OpenCV functions to detect and recognize text with TesseractWho this book is for If you are a software developer with a basic understanding of computer vision and image processing and want to develop interesting computer vision applications

with OpenCV, this Learning Path is for you. Prior knowledge of C++ and familiarity with mathematical concepts will help you better understand the concepts in this Learning Path. Information Science and Applications 2018 Springer Ambient Diagnostics addresses innovative methods for discovering patterns from affordable devices, such as mobile phones, watches, cameras, and game interfaces, to interpret multimedia data for personal health monitoring and diagnosis. This is the first comprehensive textbook on multidisciplinary innovations in affordable healthcare—from sensory fusion, pattern detection, to classification. Connecting the Dots The material in this book combines sensing, pattern recognition, and visual design, and is divided into four parts, which cover fundamentals, multimedia intelligence, pervasive sensors, and crowdsourcing. The author describes basic pattern discovery models, sound, color, motion and video analytics, and pattern discovery from games and social networks. Each chapter contains the material's main concepts, as well as case studies, and extensive study questions.

Contains overviews about diagnostic sensors on mobile phones Reflects the rapidly growing platforms for remote sensing, gaming, and social networking Incorporates cognitive tests such as fatigue detection Includes pseudo code and sample code Provides vision algorithms and multimedia analytics Covers Multimedia Intelligence Extensively Ambient Diagnostics includes concepts for ambient technologies such as point-and-search, the pill camera, active sensing with Kinect, digital human labs, negative and relative feature spaces, and semantic representations. The book also introduces methods for collective intelligence from online video games and social media. *OpenCV 3 Blueprints* Springer Science & Business Media This Edited Volume gathers a selection of refereed and revised papers originally presented at the Third International Symposium on Signal Processing and Intelligent Recognition Systems (SIRS'17), held on September 13–16, 2017 in Manipal, India. The papers offer stimulating insights into biometrics, digital watermarking, recognition

systems, image and video processing, signal and speech processing, pattern recognition, machine learning and knowledge-based systems. Taken together, they offer a valuable resource for all researchers and scientists engaged in the various fields of signal processing and related areas. *Knowledge Science, Engineering and Management* BALIGE PUBLISHING Bachelor Thesis from the year 2012 in the subject Computer Science - Software, printed single-sided, grade: A+, University College Dublin, language: English, abstract: Tracking objects in 3-dimensions is an important problem in computer vision. This paper aims to present the problem in the context of modern technology combined with established algorithms to create a hybrid system for tracking moving objects. The main issues in terms of state of the art implementation and theoretical viewpoint are discussed and conclusions are drawn on the direction taken. *Practical OpenCV* Packt Publishing Ltd Updated for OpenCV 4 and Python 3, this book covers the latest on depth cameras, 3D tracking, augmented reality, and deep neural

networks, helping you solve real-world computer vision problems with practical code Key Features Build powerful computer vision applications in concise code with OpenCV 4 and Python 3 Learn the fundamental concepts of image processing, object classification, and 2D and 3D tracking Train, use, and understand machine learning models such as Support Vector Machines (SVMs) and neural networks Book Description Computer vision is a rapidly evolving science, encompassing diverse applications and techniques. This book will not only help those who are getting started with computer vision but also experts in the domain. You'll be able to put theory into practice by building apps with OpenCV 4 and Python 3. You'll start by understanding OpenCV 4 and how to set it up with Python 3 on various platforms. Next, you'll learn how to perform basic operations such as reading, writing, manipulating, and displaying still images, videos, and camera feeds. From taking you through image processing, video analysis, and depth estimation and segmentation, to helping you gain practice by building a GUI app, this

book ensures you'll have opportunities for hands-on activities. Next, you'll tackle two popular challenges: face detection and face recognition. You'll also learn about object classification and machine learning concepts, which will enable you to create and use object detectors and classifiers, and even track objects in movies or video camera feed. Later, you'll develop your skills in 3D tracking and augmented reality. Finally, you'll cover ANNs and DNNs, learning how to develop apps for recognizing handwritten digits and classifying a person's gender and age. By the end of this book, you'll have the skills you need to execute real-world computer vision projects. What you will learn Install and familiarize yourself with OpenCV 4's Python 3 bindings Understand image processing and video analysis basics Use a depth camera to distinguish foreground and background regions Detect and identify objects, and track their motion in videos Train and use your own models to match images and classify objects Detect and recognize faces, and classify their gender and age Build an augmented reality application to track an

image in 3D Work with machine learning models, including SVMs, artificial neural networks (ANNs), and deep neural networks (DNNs) Who this book is for If you are interested in learning computer vision, machine learning, and OpenCV in the context of practical real-world applications, then this book is for you. This OpenCV book will also be useful for anyone getting started with computer vision as well as experts who want to stay up-to-date with OpenCV 4 and Python 3. Although no prior knowledge of image processing, computer vision or machine learning is required, familiarity with basic Python programming is a must.