Opencv Blueprints

WILEY STEWART

OpenCV with Python Blueprints Packt Publishing Ltd
Get to grips with traditional computer vision algorithms and deep learning approaches, and build real-world applications with OpenCV and other machine learning frameworks Key FeaturesUnderstand how to capture high-quality image data, detect and track objects, and process the actions of animals or humansImplement your learning in different areas of computer visionExplore advanced concepts in OpenCV such as machine learning, artificial neural network, and augmented realityBook Description OpenCV is a native cross-platform C++ library for computer vision, machine learning, and image processing. It is increasingly being adopted in Python for development. This book will get you hands-on with a wide range of intermediate to advanced projects using the latest version of the framework and language, OpenCV 4 and Python 3.8, instead of only covering the core concepts of OpenCV in theoretical lessons. This updated second edition will guide you through working on independent hands-on projects that focus on essential OpenCV concepts such as image processing, object detection, image manipulation, object tracking, and 3D scene reconstruction, in addition to statistical learning and neural networks. You'll begin with concepts such as image filters, Kinect depth sensor, and feature matching. As you advance, you'll not only get hands-on with reconstructing and visualizing a scene in 3D but also learn to track visually salient objects. The book will help you further build on your skills by demonstrating how to recognize traffic signs and emotions on faces. Later, you'll understand how to align images, and detect and track objects using neural networks. By the end of this OpenCV Python book, you'll have gained hands-on experience and become proficient at developing advanced computer vision apps according to specific business needs. What you will learnGenerate real-time visual effects using filters and image manipulation techniques such as dodging and burningRecognize hand gestures in real-time and perform hand-shape analysis based on the output of a Microsoft Kinect sensorLearn feature extraction and feature matching to track arbitrary objects of interestReconstruct a 3D real-world scene using 2D camera motion and camera reprojection techniquesDetect faces using a cascade classifier and identify emotions in human faces using multilayer perceptronsClassify, localize, and detect objects with deep neural networksWho this book is for This book is for intermediate-level OpenCV users who are looking to enhance their skills by developing advanced applications. Familiarity with OpenCV concepts and Python libraries, and basic knowledge of the Python programming language are assumed.
OpenCV: Computer Vision Projects with Python OpenCV 3 Blueprints
Get savvy with OpenCV and actualize cool computer vision applications About This Book Use OpenCV's Python bindings to capture video, manipulate images, and track objects Learn about the different functions of OpenCV and their actual implementations. Develop a series of intermediate to advanced projects using OpenCV and Python Who This Book Is For This learning path is for someone who has a working knowledge of Python and wants to try out OpenCV. This Learning Path will take you from a beginner to an expert in computer vision applications using OpenCV. OpenCV's application are humongous and this Learning Path is the best resource to get yourself acquainted thoroughly with OpenCV. What You Will Learn Install OpenCV and related software such as Python, NumPy, SciPy, OpenNI, and SensorKinect - all on Windows, Mac or Ubuntu Apply "curves" and other color transformations to simulate the look of old photos, movies, or video games Apply geometric transformations to images, perform image filtering, and convert an image into a cartoon-like image

Recognize hand gestures in real time and perform hand-shape analysis based on the output of a Microsoft Kinect sensor Reconstruct a 3D real-world scene from 2D camera motion and common camera reprojection techniques Detect and recognize street signs using a cascade classifier and support vector machines (SVMs) Identify emotional expressions in human faces using convolutional neural networks (CNNs) and SVMs Strengthen your OpenCV2 skills and learn how to use new OpenCV3 features In Detail OpenCV is a state-of-art computer vision library that allows a great variety of image and video processing operations. OpenCV for Python enables us to run computer vision algorithms in real time. This learning path proposes to teach the following topics. First, we will learn how to get started with OpenCV and OpenCV3's Python API, and develop a computer vision application that tracks body parts. Then, we will build amazing intermediate-level computer vision applications such as making an object disappear from an image, identifying different shapes, reconstructing a 3D map from images , and building an augmented reality application, Finally, we'll move to more advanced projects such as hand gesture recognition, tracking visually salient objects, as well as recognizing traffic signs and emotions on faces using support vector machines and multi-layer perceptrons respectively. This Learning Path combines some of the best that Packt has to offer in one complete, curated package. It includes content from the following Packt products: OpenCV Computer Vision with Python by Joseph Howse OpenCV with Python By Example by Prateek Joshi OpenCV with Python Blueprints by Michael Beyeler Style and approach This course aims to create a smooth learning path that will teach you how to get started with will learn how to get started with OpenCV and OpenCV 3's Python API, and develop superb computer vision applications. Through this comprehensive course, you'll learn to create computer vision applications from scratch to finish and more!.

Smart Systems Design, Applications, and Challenges C.H.Beck

OpenCV 3 is a native cross-platform library for computer vision, machine learning, and image processing. OpenCV's convenient high-level APIs hide very powerful internals designed for computational efficiency that can take advantage of multicore and GPU processing. This book will help you tackle increasingly challenging computer vision problems ...

Hello World dpunkt.verlag

Create four mobile apps and explore the world through photography and computer vision About This Book Efficiently harness iOS and OpenCV to capture and process high-quality images at high speed Develop photographic apps and augmented reality apps quickly and easily Detect, recognize, and morph faces and objects Who This Book Is For If you want to do computational photography and computer vision on Apple's mobile devices, then this book is for you. No previous experience with app development or OpenCV is required. However, basic knowledge of C++ or Objective-C is recommended. What You Will Learn Use Xcode and Interface Builder to develop iOS apps Obtain OpenCV's standard modules and build extra modules from source Control all the parameters of the iOS device's camera Capture, save, and share photos and videos Analyze colors, shapes, and textures in ordinary and specialized photographs Blend and compare images to create special photographic effects and augmented reality tools Detect faces and morph facial features Classify coins and other objects In Detail iOS Application Development with OpenCV 3 enables you to turn your smartphone camera into an advanced tool for photography and computer vision. Using the highly optimized OpenCV library, you will process high-resolution images in real time. You will locate and classify objects, and create models of their geometry. As you develop photo and augmented reality apps, you will gain a general understanding of iOS frameworks and developer tools, plus a deeper understanding of the camera and image APIs. After completing the book's four projects, you will be a well-rounded iOS developer with valuable experience in OpenCV. Style and approach The book is practical, creative, and precise. It shows you the steps to create and customize five projects that solve important problems for beginners in mobile app development and computer vision. Complete source code and numerous visual aids are included in each chapter. Experimentation is an important part of the book. You will use computer vision to explore the real world, and then you will refine the projects based on your findings.

Visionäre der Programmierung Springer

3D-Fotos und -Videos erstellen und präsentieren: So geht’s! Wünschen Sie sich beim Betrachten Ihrer Reisefotos manchmal, Sie könnten noch einmal an diesen Ort zurückkehren? Wäre es nicht toll, wenn Fotos plötzlich als dreidimensionale Raumbilder vor Ihren Augen erscheinen würden? In diesem Buch erfahren Sie alles, was Sie wissen müssen, um überzeugende 3D-Fotos und -Videos zu erstellen – von der analogen oder digitalen Aufnahme über die Bearbeitung bis hin zur Präsentation. Folgende Themen erwarten Sie: - Der Weg zum 3D-Foto oder -Video mit Stereo-/Monokamera, Smartphone, Action Cam & RaspiCam - Die komplette Bandbreite der Verfahren: analog, digital & hybrid - Alles rund um Bildgestaltung, Kameraausrichtung, Gespanne, Side-by-Side-Format, Anaglyphentechnik, Focus Stacking, HDR u.v.m. - Bildbearbeitung/-optimierung mit StereoPhoto Maker & Co. - Bildbetrachtung & Präsentation mittels Parallel-/Kreuzblick, Rot-Cyan-Brille, VR-Brille, Shuttertechnik oder 3D-Polarisation - 3D-Panorama, 360°-Aufnahmen und fotorealistische Computermodelle für Mixed Reality & 3D-Druck Wenn Sie darauf brennen, Ihre eigenen 3D-Fotos und -Videos mit Kamera oder Smartphone zu erstellen, dann liefert Ihnen dieses Buch alle wichtigen Skills, um Ergebnisse mit Wow-Effekt zu erzielen.

Big Data Analytics in Astronomy, Science, and Engineering Efe Akademi Yayınları

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.

Learning OpenCV 4 Computer Vision with Python Carl Hanser Verlag GmbH Co KG

This book constitutes the proceedings of the 10th International Conference on Big Data Analytics, BDA 2022, which took place in a hybrid mode during December 2022 in Aizu, Japan. The 14 full papers included in this volume were carefully reviewed and selected from 70 submissions. They were organized in topical sections as follows: big data analytics, networking, social media, search, information extraction, image processing and analysis, spatial, text, mobile and graph data analysis, machine learning, and healthcare.

Mit Python langweilige Jobs erledigen O'Reilly

Unleash the power of computer vision with Python using OpenCVAbout This Book- Create impressive applications with OpenCV and Python- Familiarize yourself with advanced machine learning concepts- Harness the power of computer vision with this easy-to-follow guideWho This Book Is ForIntended for novices to the world of OpenCV and computer vision, as well as OpenCV veterans that want to learn about what's new in OpenCV 3, this book is useful as a reference for experts and a training manual for beginners, or for anybody who wants to familiarize themselves with the concepts of object classification and detection in simple and understandable terms. Basic knowledge about Python and programming concepts is required, although the book has an easy learning curve both from a theoretical and coding point of view.What You Will Learn- Install and familiarize yourself with OpenCV 3's Python API- Grasp the basics of image processing and video analysis- Identify and recognize objects in images and videos- Detect and recognize faces using OpenCV- Train and use your own object classifiers- Learn about machine learning concepts in a computer vision context- Work with artificial neural networks using OpenCV- Develop your own computer vision real-life applicationIn DetailOpenCV 3 is a state-of-the-art computer vision library that allows a great variety of image and video processing operations. Some of the more spectacular and futuristic features such as face recognition or object tracking are easily achievable with OpenCV 3. Learning the basic concepts behind computer vision algorithms, models, and OpenCV's API will enable the development of all sorts of real-world applications, including security and surveillance.Starting with basic image processing operations, the book will take you through to advanced computer vision concepts. Computer vision is a rapidly evolving science whose applications in the real world are exploding, so this book will appeal to computer vision novices as well as experts of the subject wanting to learn the brand new OpenCV 3.0.0. You will build a theoretical foundation of image processing and video analysis, and progress to the concepts of classification through machine learning, acquiring the technical know-how that will allow you to create and use object detectors and classifiers, and even track objects in movies or video camera feeds. Finally, the journey will end in the world of artificial neural networks, along with the development of a hand-written digits recognition application.Style and approachThis book is a comprehensive guide to the brand new OpenCV 3 with Python to develop real-life computer vision applications.

Learning OpenCV 3 Computer Vision with Python Packt Publishing Ltd

Der Stil dieses Buches - leicht verständlich und mit großzügigem Layout - hat schon Tausende von Lesern begeistert. Nach "HTML & CSS" und "JavaScript & jQuery" erscheint jetzt "PHP & MySQL" von Jon Duckett. Lernen Sie, Websites zu erstellen, die leicht aktualisiert werden können und trotzdem jedem Benutzer andere Inhalte zeigen. Die Techniken in diesem Buch sind für alle Arten von Websites nützlich: Online-Shops, Kataloge, Blogs, soziale Netzwerke, Suchmaschinen und viele mehr. PHP- und MySQL-Kenntnisse sind im Übrigen auch bei der Verwendung von Content-Management-Systemen wie WordPress, Magento, Drupal und Joomla sehr nützlich.

iOS Application Development with OpenCV 3 Packt Publishing Ltd

Machine Learning for OpenCV Packt Publishing Ltd

This book is a timely collection of chapters that present the state of the art within the analysis and application of big data. Working within the broader context of big data, this text focuses on the hot topics of social network modelling and analysis such as online dating recommendations, hiring practices, and subscription-type prediction in mobile phone services. Manuscripts are expanded versions of the best papers presented at the IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM’2016), which was held in August 2016. The papers were among the best featured at the meeting and were then improved and extended substantially. Social Network Based Big Data Analysis and Applications will appeal to students and researchers in the field.

Android-Programmierung O'Reilly Germany

Design and develop advanced computer vision projects using OpenCV with Python About This Book Program advanced computer vision applications in Python using different features of the OpenCV library Practical end-to-end project covering an important computer vision problem All projects in the book include a step-by-step guide to create computer vision applications Who This Book Is For This book is for intermediate users of OpenCV who aim to master their skills by developing advanced practical applications. Readers are expected to be familiar with OpenCV's concepts and Python libraries. Basic knowledge of Python programming is expected and assumed. What You Will Learn Generate real-time visual effects using different filters and image manipulation techniques such as dodging and burning Recognize hand gestures in real time and perform hand-shape analysis based on the output of a Microsoft Kinect sensor Learn feature extraction and feature matching for tracking arbitrary objects of interest Reconstruct a 3D real-world scene from 2D camera motion and common camera reprojection techniques Track visually salient objects by searching for and focusing on important regions of an image Detect faces using a cascade classifier and recognize emotional expressions in human faces using multi-layer peceptrons (MLPs) Recognize street signs using a multi-class adaptation of support vector machines (SVMs) Strengthen your OpenCV2 skills and learn how to use new OpenCV3 features In Detail OpenCV is a native cross platform C++ Library for computer vision, machine learning, and image processing. It

is increasingly being adopted in Python for development. OpenCV has C++/C, Python, and Java interfaces with support for Windows, Linux, Mac, iOS, and Android. Developers using OpenCV build applications to process visual data; this can include live streaming data from a device like a camera, such as photographs or videos. OpenCV offers extensive libraries with over 500 functions This book demonstrates how to develop a series of intermediate to advanced projects using OpenCV and Python, rather than teaching the core concepts of OpenCV in theoretical lessons. Instead, the working projects developed in this book teach the reader how to apply their theoretical knowledge to topics such as image manipulation, augmented reality, object tracking, 3D scene reconstruction, statistical learning, and object categorization. By the end of this book, readers will be OpenCV experts whose newly gained experience allows them to develop their own advanced computer vision applications. Style and approach This book covers independent hands-on projects that teach important computer vision concepts like image processing and machine learning for OpenCV with multiple examples.

Generatives Deep Learning Packt Publishing Ltd

Turn futuristic ideas about computer vision and machine learning into demonstrations that are both functional and entertaining Key FeaturesBuild OpenCV 4 apps with Python 2 and 3 on desktops and Raspberry Pi, Java on Android, and C# in UnityDetect, classify, recognize, and measure real-world objects in real-timeWork with images from diverse sources, including the web, research datasets, and various camerasBook Description OpenCV 4 is a collection of image processing functions and computer vision algorithms. It is open source, supports many programming languages and platforms, and is fast enough for many real-time applications. With this handy library, you'll be able to build a variety of impressive gadgets. OpenCV 4 for Secret Agents features a broad selection of projects based on computer vision, machine learning, and several application frameworks. To enable you to build apps for diverse desktop systems and Raspberry Pi, the book supports multiple Python versions, from 2.7 to 3.7. For Android app development, the book also supports Java in Android Studio, and C# in the Unity game engine. Taking inspiration from the world of James Bond, this book will add a touch of adventure and computer vision to your daily routine. You'll be able to protect your home and car with intelligent camera systems that analyze obstacles, people, and even cats. In addition to this, you'll also learn how to train a search engine to praise or criticize the images that it finds, and build a mobile app that speaks to you and responds to your body language. By the end of this book, you will be equipped with the knowledge you need to advance your skills as an app developer and a computer vision specialist. What you will learnDetect motion and recognize gestures to control a smartphone gameDetect car headlights and estimate their distanceDetect and recognize human and cat faces to trigger an alarmAmplify motion in a real-time video to show heartbeats and breathsMake a physics simulation that detects shapes in a real-world drawingBuild OpenCV 4 projects in Python 3 for desktops and Raspberry PiDevelop OpenCV 4 Android applications in Android Studio and UnityWho this book is for If you are an experienced software developer who is new to computer vision or machine learning, and wants to study these topics through creative projects, then this book is for you. The book will also help existing OpenCV users who want upgrade their projects to OpenCV 4 and new versions of other libraries, languages, tools, and operating systems. General familiarity with object-oriented programming, application development, and usage of operating systems (OS), developer tools, and the command line is required.

OpenCV with Python Blueprints: Design and Develop Advanced Computer Vision Projects Using OpenCV with Python Packt Publishing Ltd

Unmanned aerial systems (UAS) have evolved rapidly in recent years thanks to advances in microelectromechanical components, navigation, perception, and artificial intelligence, allowing for a fast development of autonomy. This book presents general approaches to develop, test, and evaluate critical functions such as navigation, obstacle avoidance and perception, and the capacity to improve performance in real and simulated scenarios. It provides the practical knowledge to install, analyze and evaluate UAS solutions working in real systems; illustrates how to use and configure complete platforms and software tools; and reviews the main enabling technologies applied to develop UAS, possibilities and evaluation methodology. You will get the tools you need to evaluate navigation and obstacle avoidance functions, object detection, and planning and landing alternatives in simulated conditions. The book also provides helpful guidance on the integration of additional sensors (video, weather, meteorological) and communication networks to build IoT solutions. This is an important book for practitioners and researchers interested in integrating advanced techniques in the fields of AI, sensor fusion and mission management, and anyone interest in applying and testing advanced algorithms in UAS platforms.

OpenCV 4 with Python Blueprints Packt Publishing Ltd

Unleash the power of computer vision with Python using OpenCV About This Book Create impressive applications with OpenCV and Python Familiarize yourself with advanced machine learning concepts Harness the power of computer vision with this easy-to-follow guide Who This Book Is For Intended for novices to the world of OpenCV and computer vision, as well as OpenCV veterans that want to learn about what's new in OpenCV 3, this book is useful as a reference for experts and a training manual for beginners, or for anybody who wants to familiarize themselves with the concepts of object classification and detection in simple and understandable terms. Basic knowledge about Python and programming concepts is required, although the book has an easy learning curve both from a theoretical and coding point of view. What You Will Learn Install and familiarize yourself with OpenCV 3's Python API Grasp the basics of image processing and video analysis Identify and recognize objects in images and videos Detect and recognize faces using OpenCV Train and use your own object classifiers Learn about machine learning concepts in a computer vision context Work with artificial neural networks using OpenCV Develop your own computer vision real-life application In Detail OpenCV 3 is a state-of-the-art computer vision library that allows a great variety of image and video processing operations. Some of the more spectacular and futuristic features such as face recognition or object tracking are easily achievable with OpenCV 3. Learning the basic concepts behind computer vision algorithms, models, and OpenCV's API will enable the development of all sorts of real-world applications, including security and surveillance. Starting with basic image processing operations, the book will take you through to advanced computer vision concepts. Computer vision is a rapidly evolving science whose applications in the real world are exploding, so this book will appeal to computer vision novices as well as experts of the subject wanting to learn the brand new OpenCV 3.0.0. You will build a theoretical foundation of image processing and video analysis, and progress to the concepts of classification through machine learning, acquiring the technical know-how that will allow you to create and use object detectors and classifiers, and even track objects in movies or video camera feeds. Finally, the journey will end in the world of artificial neural networks, along with the development of a hand-written digits recognition application. Style and approach This book is a comprehensive guide to the brand new OpenCV 3 with Python to develop real-life computer vision applications.

Learning OpenCV 3 Computer Vision with Python Springer

Weitere Informationen zum Buch und zur Autorin finden Sie beim Special Sie sind eines Verbrechens angeklagt. Wer soll über Ihr Schicksal entscheiden? Ein menschlicher Richter oder ein Computer-Algorithmus? Sie sind sich absolut sicher? Sie zögern womöglich? In beiden Fällen sollten Sie das Buch der jungen Mathematikerin und Moderatorin Hannah Fry lesen, das mit erfrischender Direktheit über Algorithmen aufklärt, indem es von Menschen handelt. Algorithmen prägen in wachsendem Ausmaß den Alltag von Konsum, Finanzen, Medizin, Polizei, Justiz, Demokratie und sogar Kunst. Sie sortieren die Welt für uns, eröffnen neue Optionen und nehmen uns Entscheidungen ab - schnell, effektiv, gründlich. Aber sie tun das, ohne zu fragen, und stellen uns vor neue Dilemmata. Vor allem jedoch: Wir neigen dazu, Algorithmen als eine Art Autorität zu betrachten. statt ihre Macht infrage zu stellen. Keine Dimension unserer Welt, in der sie nicht längst Einzug gehalten haben: Algorithmen, diese unscheinbaren Folgen von Anweisungen, die im Internet sowieso, aber auch in jedem Computerprogramm tätig sind, prägen in wachsendem, beängstigendem Ausmaß den Alltag von Konsum, Finanzen, Medizin, Polizei, Justiz, Demokratie und sogar Kunst. Sie sortieren die Welt für uns, eröffnen neue Optionen und nehmen uns Entscheidungen ab - schnell, effektiv, gründlich. Aber sie tun das häufig, ohne uns zu fragen, und sie stellen uns vor neue, keineswegs einfach zu lösende Dilemmata. Vor allem aber: Wir neigen dazu, Algorithmen als eine Art Autorität zu betrachten, statt ihre Macht in Frage zu stellen. Das öffnet Menschen, die uns ausbeuten wollen, Tür und Tor. Es verhindert aber auch, dass wir bessere Algorithmen bekommen. Solche, die uns bei Entscheidungen unterstützen, anstatt über uns zu verfügen. Die offenlegen, wie sie zu einer bestimmten Entscheidung gelangen. Demokratische, menschliche Algorithmen. Dafür plädiert dieses Buch - zugänglich, unterhaltsam, hochinformativ.

C++ für Spieleprogrammierer 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.

OpenCV: Computer Vision Projects with Python IGI Global

This book provides a thorough overview of cutting-edge research on electronics applications relevant to industry, the environment, and society at large. It covers a broad spectrum of application domains, from automotive to space and from health to security, while devoting special attention to the use of embedded devices and sensors for imaging, communication and control. The book is based on the 2018 ApplePies Conference, held in Pisa, Italy in September 2018, which brought together researchers and stakeholders to consider the most significant current trends in the field of applied electronics and to debate visions for the future. Areas addressed by the conference included information communication technology; biotechnology and biomedical imaging; space; secure, clean and efficient energy; the environment; and smart, green and integrated transport. As electronics technology continues to develop apace, constantly meeting previously unthinkable targets, further attention needs to be directed toward the electronics applications and the development of systems that facilitate human activities. This book, written by industrial and academic professionals, represents a valuable contribution in this endeavor.

Bilgisayar Bilimlerinde Teorik Ve Uygulamalı Araştırmalar Carl Hanser Verlag GmbH Co KG

The essential blueprints and workflow you need to build successful AI business applications Key FeaturesLearn and master the essential blueprints to program AI for real-world business applicationsGain insights into how modern AI and machine learning solve core business challengesAcquire practical techniques and a workflow that can build AI applications using state-of-the-art software librariesWork with a practical, code-based strategy for creating successful AI solutions in your businessBook Description AI Blueprints gives you a working framework and the techniques to build your own successful AI business applications. You'll learn across six business scenarios how AI can solve critical challenges with state-of-the-art AI software libraries and a well thought out workflow. Along the way you'll discover the practical techniques to build AI business applications from first design to full coding and deployment. The AI blueprints in this book solve key business scenarios. The first blueprint uses AI to find solutions for building plans for cloud computing that are on-time and under budget. The second blueprint involves an AI system that continuously monitors social media to gauge public feeling about a topic of interest - such as self-driving cars. You'll learn how to approach AI business problems and apply blueprints that can ensure success. The next AI scenario shows you how to approach the problem of creating a

recommendation engine and monitoring how those recommendations perform. The fourth blueprint shows you how to use deep learning to find your business logo in social media photos and assess how people interact with your products. Learn the practical techniques involved and how to apply these blueprints intelligently. The fifth blueprint is about how to best design a ‘trending now’ section on your website, much like the one we know from Twitter. The sixth blueprint shows how to create helpful chatbots so that an AI system can understand customers’ questions and answer them with relevant responses. This book continuously demonstrates a working framework and strategy for building AI business applications. Along the way, you’ll also learn how to prepare for future advances in AI. You’ll gain a workflow and a toolbox of patterns and techniques so that you can create your own smart code. What you will learnAn essential toolbox of blueprints and advanced techniques for building AI business applicationsHow to design and deploy AI applications that meet today’s business needsA workflow from first design stages to practical code solutions in your next AI projectsSolutions for AI projects that involve social media analytics and recommendation enginesPractical projects and techniques for sentiment analysis and helpful chatbotsA blueprint for AI projects that recommend products based on customer purchasing habitsHow to prepare yourself for the next decade of AI and machine learning advancementsWho this book is for Programming AI Business Applications provides an introduction to AI with real-world examples. This book can be read and understood by programmers and students without requiring previous AI experience. The projects in this book make use of Java and Python and several popular and state-of-the-art opensource AI libraries.

Applications in Electronics Pervading Industry, Environment and Society O'Reilly

Generative Modelle haben sich zu einem der spannendsten Themenbereiche der Künstlichen Intelligenz entwickelt: Mit generativem Deep Learning ist es inzwischen möglich, einer Maschine das Malen, Schreiben oder auch das Komponieren von Musik beizubringen – kreative Fähigkeiten, die bisher dem Menschen vorbehalten waren. Mit diesem praxisnahen Buch können Data Scientists einige der eindrucksvollsten generativen Deep-Learning-Modelle nachbilden, wie z.B. Generative Adversarial Networks (GANs), Variational Autoencoder (VAEs), Encoder-Decoder- sowie World-Modelle. David Foster vermittelt zunächst die Grundlagen des Deep Learning mit Keras und veranschaulicht die Funktionsweise jeder Methode, bevor er zu einigen der modernsten Algorithmen auf diesem Gebiet vorstößt. Die zahlreichen praktischen Beispiele und Tipps helfen Ihnen herauszufinden, wie Ihre Modelle noch effizienter lernen und noch kreativer werden können. - Entdecken Sie, wie Variational Autoencoder den Gesichtsausdruck auf Fotos verändern können - Erstellen Sie praktische GAN-Beispiele von Grund auf und nutzen Sie CycleGAN zur Stilübertragung und MuseGAN zum Generieren von Musik - Verwenden Sie rekurrente generative Modelle, um Text zu erzeugen, und lernen Sie, wie Sie diese Modelle mit dem Attention-Mechanismus verbessern können - Erfahren Sie, wie generatives Deep Learning Agenten dabei unterstützen kann, Aufgaben im Rahmen des Reinforcement Learning zu erfüllen - Lernen Sie die Architektur von Transformern (BERT, GPT-2) und Bilderzeugungsmodellen wie ProGAN und StyleGAN kennen "Dieses Buch ist eine leicht zugängliche Einführung in das Deep-Learning-Toolkit für generatives Modellieren. Wenn Sie ein kreativer Praktiker sind, der es liebt, an Code zu basteln, und Deep Learning für eigene Aufgaben nutzen möchte, dann ist dieses Buch genau das Richtige für Sie." — David Ha, Research Scientist bei Google Brain