

Scale Invariant Feature Transform Opencv

Adel Francis,Edmond Miresco,Silvio Melhado

Hands-On Image Processing with Python Sandipan Dey,2018-11-30 Explore the mathematical computations and algorithms for image processing using popular Python tools and frameworks. Key FeaturesPractical coverage of every image processing task with popular Python librariesIncludes topics such as pseudo-coloring, noise smoothing, computing image descriptorsCovers popular machine learning and deep learning techniques for complex image processing tasksBook Description Image processing plays an important role in our daily lives with various applications such as in social media (face detection), medical imaging (X-ray, CT-scan), security (fingerprint recognition) to robotics & space. This book will touch the core of image processing, from concepts to code using Python. The book will start from the classical image processing techniques and explore the evolution of image processing algorithms up to the recent advances in image processing or computer vision with deep learning. We will learn how to use image processing libraries such as PIL, scikit-mage, and scipy ndimage in Python. This book will enable us to write code snippets in Python 3 and quickly implement complex image processing algorithms such as image enhancement, filtering, segmentation, object detection, and classification. We will be able to use machine learning models using the scikit-learn library and later explore deep CNN, such as VGG-19 with Keras, and we will also use an end-to-end deep learning model called YOLO for object detection. We will also cover a few advanced problems, such as image inpainting, gradient blending, variational denoising, seam carving, quilting, and morphing. By the end of this book, we will have learned to implement various algorithms for efficient image processing. What you will learnPerform basic data pre-processing tasks such as image denoising and spatial filtering in PythonImplement Fast Fourier Transform (FFT) and Frequency domain filters (e.g., Weiner) in PythonDo morphological image processing and segment images with different algorithmsLearn techniques to extract features from images and match imagesWrite Python code to implement supervised / unsupervised machine learning algorithms for image processingUse deep learning models for image classification, segmentation, object detection and style transferWho this book is for This book is for Computer Vision Engineers, and machine learning developers who are good with Python programming and want to explore details and complexities of image processing. No prior knowledge of the image processing techniques is expected.

Biologically Inspired Cognitive Architectures 2024 Alexei V. Samsonovich,Tingting Liu,2024-12-09 This book reports on original approaches intended to support the development of biologically inspired cognitive architectures. It bridges

together different disciplines, including artificial intelligence, linguistics, neuro- and social sciences, psychology and philosophy of mind, among others. The chapters are based on contributions presented at the 2024 Annual International Conference on Brain-Inspired Cognitive Architectures for Artificial Intelligence (the 15th Annual Meeting of the BICA Society, BICA*AI 2024), organized in collaboration with the 17th Conference on Artificial General Intelligence (AGI 2024) and held on August 13-16, 2024, in Seattle, WA, USA. They cover emerging methods, theories and ideas towards the realization of general-purpose humanlike artificial intelligence or fostering a better understanding of the ways the human mind works. All in all, this book provides engineers, mathematicians, psychologists, computer scientists and other experts with a timely snapshot of recent research and a source of inspiration for future developments in the broadly intended areas of artificial intelligence and biological inspiration.

Python Machine Learning Cookbook Giuseppe Ciaburro, Prateek Joshi, 2019-03-30 Discover powerful ways to effectively solve real-world machine learning problems using key libraries including scikit-learn, TensorFlow, and PyTorch Key Features Learn and implement machine learning algorithms in a variety of real-life scenarios Cover a range of tasks catering to supervised, unsupervised and reinforcement learning techniques Find easy-to-follow code solutions for tackling common and not-so-common challenges Book Description This eagerly anticipated second edition of the popular Python Machine Learning Cookbook will enable you to adopt a fresh approach to dealing with real-world machine learning and deep learning tasks. With the help of over 100 recipes, you will learn to build powerful machine learning applications using modern libraries from the Python ecosystem. The book will also guide you on how to implement various machine learning algorithms for classification, clustering, and recommendation engines, using a recipe-based approach. With emphasis on practical solutions, dedicated sections in the book will help you to apply supervised and unsupervised learning techniques to real-world problems. Toward the concluding chapters, you will get to grips with recipes that teach you advanced techniques including reinforcement learning, deep neural networks, and automated machine learning. By the end of this book, you will be equipped with the skills you need to apply machine learning techniques and leverage the full capabilities of the Python ecosystem through real-world examples. What you will learn Use predictive modeling and apply it to real-world problems Explore data visualization techniques to interact with your data Learn how to build a recommendation engine Understand how to interact with text data and build models to analyze it Work with speech data and recognize spoken words using Hidden Markov Models Get well versed with reinforcement learning, automated ML, and transfer learning Work with image data and build systems for image recognition and biometric face recognition Use deep neural networks to build an optical character recognition system Who this book is for This book is for data scientists, machine learning developers, deep learning enthusiasts and Python programmers who want to solve real-world challenges using machine-learning techniques and algorithms. If you are facing challenges at work and want ready-to-use code solutions to cover key tasks in machine

learning and the deep learning domain, then this book is what you need. Familiarity with Python programming and machine learning concepts will be useful.

Embedded Artificial Intelligence Arpita Nath Boruah, Mrinal Goswami, Manoj Kumar, Octavio Loyola-González, 2025-03-28 This book explores the role of embedded AI in revolutionizing industries such as healthcare, transportation, manufacturing, and retail. It begins by introducing the fundamentals of AI and embedded systems and specific challenges and opportunities. A key focus of this book is developing efficient and effective algorithms and models for embedded AI systems, as embedded systems have limited processing power, memory, and storage. It discusses a variety of techniques for optimizing algorithms and models for embedded systems, including hardware acceleration, model compression, and quantization. Key features: • Explores security experiments in emerging post-CMOS technologies using AI, including side channel attack-resistant embedded systems. • Discusses different hardware and software platforms available for developing embedded AI applications, as well as the various techniques used to design and implement these systems. • Considers ethical and societal implications of embedded AI vis-a-vis the need for responsible development and deployment of embedded AI systems. • Focuses on application-based research and case studies to develop embedded AI systems for real-life applications. • Examines high-end parallel systems to run complex AI algorithms and comprehensive functionality while maintaining portability and power efficiency. This reference book is for students, researchers, and professionals interested in embedded AI and relevant branches of computer science, electrical engineering, or artificial intelligence.

Proceedings of the International Conference on Advanced Intelligent Systems and Informatics 2018 Aboul Ella Hassanien, Mohamed F. Tolba, Khaled Shaalan, Ahmad Taher Azar, 2018-08-28 This book presents the proceedings of the 4th International Conference on Advanced Intelligent Systems and Informatics 2018 (AISI2018), which took place in Cairo, Egypt from September 1 to 3, 2018. This international and interdisciplinary conference, which highlighted essential research and developments in the field of informatics and intelligent systems, was organized by the Scientific Research Group in Egypt (SRGE). The book is divided into several main sections: Intelligent Systems; Robot Modeling and Control Systems; Intelligent Robotics Systems; Machine Learning Methodology and Applications; Sentiment Analysis and Arabic Text Mining; Swarm Optimizations and Applications; Deep Learning and Cloud Computing; Information Security, Hiding, and Biometric Recognition; and Data Mining, Visualization and E-learning.

Advances in Information Technology in Civil and Building Engineering Adel Francis, Edmond Miresco, Silvio Melhado, 2025-03-29 This book gathers the latest advances, innovations, and applications in the field of information technology in civil and building engineering, presented at the 20th International Conference on Computing in Civil and Building Engineering (ICCCBE), held in Montreal, Canada on August 25-28, 2024. It covers highly diverse topics such as BIM, construction information modeling, knowledge management, GIS, GPS, laser scanning, sensors, monitoring, VR/AR,

computer-aided construction, product and process modeling, big data and IoT, cooperative design, mobile computing, simulation, structural health monitoring, computer-aided structural control and analysis, ICT in geotechnical engineering, computational mechanics, asset management, maintenance, urban planning, facility management, and smart cities. Written by leading researchers and engineers, and selected by means of a rigorous international peer-review process, the contributions highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaborations.

Advanced Technologies, Embedded and Multimedia for Human-centric Computing Yueh-Min Huang, Han-Chieh Chao, Der-Jiunn Deng, James J. (Jong Hyuk) Park, 2013-11-13 The theme of HumanCom and EMC is focused on the various aspects of human-centric computing for advances in computer science and its applications, embedded and multimedia computing and provides an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of human-centric computing. And the theme of EMC (Advanced in Embedded and Multimedia Computing) is focused on the various aspects of embedded system, smart grid, cloud and multimedia computing, and it provides an opportunity for academic, industry professionals to discuss the latest issues and progress in the area of embedded and multimedia computing. Therefore this book will include the various theories and practical applications in human-centric computing and embedded and multimedia computing.

OBJECT MATCHING IN DIGITAL VIDEO USING DESCRIPTORS WITH PYTHON AND TKINTER Vivian Siahaan, Rismon Hasiholan Sianipar, 2024-06-14 The first project is a sophisticated tool for comparing and matching visual features between images using the Scale-Invariant Feature Transform (SIFT) algorithm. Built with Tkinter, it features an intuitive GUI enabling users to load images, adjust SIFT parameters (e.g., number of features, thresholds), and customize BFMatcher settings. The tool detects keypoints invariant to scale, rotation, and illumination, computes descriptors, and uses BFMatcher for matching. It includes a ratio test for match reliability and visualizes matches with customizable lines. Designed for accessibility and efficiency, SIFTMacher_NEW.py integrates advanced computer vision techniques to support diverse applications in image processing, research, and industry. The second project is a Python-based GUI application designed for image matching using the ORB (Oriented FAST and Rotated BRIEF) algorithm, leveraging OpenCV for image processing, Tkinter for GUI development, and PIL for image format handling. Users can load and match two images, adjusting parameters such as number of features, scale factor, and edge threshold directly through sliders and options provided in the interface. The application computes keypoints and descriptors using ORB, matches them using a BFMatcher based on Hamming distance, and visualizes the top matches by drawing lines between corresponding keypoints on a combined image. ORBMacher.py offers a user-friendly platform for experimenting with ORB's capabilities in feature detection and image matching, suitable for educational and practical applications in computer vision and image processing.

The third project is a Python application designed for visualizing keypoint matches between images using the FAST (Features from Accelerated Segment Test) detector and SIFT (Scale-Invariant Feature Transform) descriptor. Built with Tkinter for the GUI, it allows users to load two images, adjust detector parameters like threshold and non-maximum suppression, and visualize matches in real-time. The interface includes controls for image loading, parameter adjustment, and features a scrollable canvas for exploring matched results. The core functionality employs OpenCV for image processing tasks such as keypoint detection, descriptor computation, and matching using a Brute Force Matcher with L2 norm. This tool is aimed at enhancing user interaction and analysis in computer vision applications. The fourth project creates a GUI for matching keypoints between images using the AGAST (Adaptive and Generic Accelerated Segment Test) algorithm with BRIEF descriptors. Utilizing OpenCV for image processing and Tkinter for the interface, it initializes a window titled AGAST Image Matcher with a control_frame for buttons and sliders. Users can load two images using load_button1 and load_button2, which trigger file dialogs and display images on a scrollable canvas via load_image1(), load_image2(), and show_image(). Adjustable parameters include AGAST threshold and BRIEF descriptor bytes. Clicking match_button invokes match_images(), checking image loading, detecting keypoints with AGAST, computing BRIEF descriptors, and using BFMatcher for matching and visualization. The matched image, enhanced with color-coded lines, replaces previous images on the canvas, ensuring clear, interactive results presentation. The fifth project is a Python-based application that utilizes the AKAZE feature detection algorithm from OpenCV for matching keypoints between images. Implemented with Tkinter for the GUI, it features a AKAZE Image Matcher window with buttons for loading images and adjusting AKAZE parameters like detection threshold, octaves, and octave layers. Upon loading images via file dialog, the app reads and displays them on a scrollable canvas, ensuring smooth navigation for large images. The match_images method manages keypoint detection using AKAZE and descriptor matching via BFMatcher with Hamming distance, sorting matches for visualization with color-coded lines. It updates the canvas with the matched image, clearing previous content for clarity and enhancing user interaction in image analysis tasks. The sixth project is a Tkinter-based Python application designed to facilitate the matching and visualization of keypoint descriptors between two images using the BRISK feature detection and description algorithm. Upon initialization, it creates a window titled BRISK Image Matcher with a canvas (control_frame) for hosting buttons (Load Image 1, Load Image 2, Match Images) and sliders to adjust BRISK parameters like Threshold, Octaves, and Pattern Scale. Loaded images are displayed on canvas_frame with scrollbars for navigation, utilizing methods like load_image1() and load_image2() to handle image loading and show_image() to convert and display images in RGB format compatible with Tkinter. The match_images() method manages keypoint detection, descriptor calculation using BRISK, descriptor matching with the Brute-Force Matcher, and visualization of matched keypoints with colored lines on canvas_frame. This comprehensive interface empowers users to explore and analyze image similarities based on distinct keypoints effectively. The seventh project utilizes Tkinter to create a

GUI application tailored for processing and analyzing video frames. It integrates various libraries such as Pillow, imageio, OpenCV, numpy, matplotlib, pywt, and os to support functionalities ranging from video handling to image processing and feature analysis. At its core is the Filter_CroppedFrame class, which manages the GUI layout and functionality. The application features control buttons for video playback, comboboxes for selecting zoom levels, filters, and matchers, and a canvas for displaying video frames with support for interactive navigation and frame processing. Event handlers facilitate tasks like video file loading, playback control, and frame navigation, while offering options for applying filters and feature matching algorithms to enhance video analysis capabilities.

Progress in Informatics ,2010

Object Matching in Digital Video Using Descriptors with Python and Tkinter Rismon Hasiholan Sianipar,Vivian Siahaan,2024-06-14 The first project is a sophisticated tool for comparing and matching visual features between images using the Scale-Invariant Feature Transform (SIFT) algorithm. Built with Tkinter, it features an intuitive GUI enabling users to load images, adjust SIFT parameters (e.g., number of features, thresholds), and customize BFMatcher settings. The tool detects keypoints invariant to scale, rotation, and illumination, computes descriptors, and uses BFMatcher for matching. It includes a ratio test for match reliability and visualizes matches with customizable lines. Designed for accessibility and efficiency, SIFTMacher_NEW.py integrates advanced computer vision techniques to support diverse applications in image processing, research, and industry. The second project is a Python-based GUI application designed for image matching using the ORB (Oriented FAST and Rotated BRIEF) algorithm, leveraging OpenCV for image processing, Tkinter for GUI development, and PIL for image format handling. Users can load and match two images, adjusting parameters such as number of features, scale factor, and edge threshold directly through sliders and options provided in the interface. The application computes keypoints and descriptors using ORB, matches them using a BFMatcher based on Hamming distance, and visualizes the top matches by drawing lines between corresponding keypoints on a combined image. ORBMacher.py offers a user-friendly platform for experimenting with ORB's capabilities in feature detection and image matching, suitable for educational and practical applications in computer vision and image processing. The third project is a Python application designed for visualizing keypoint matches between images using the FAST (Features from Accelerated Segment Test) detector and SIFT (Scale-Invariant Feature Transform) descriptor. Built with Tkinter for the GUI, it allows users to load two images, adjust detector parameters like threshold and non-maximum suppression, and visualize matches in real-time. The interface includes controls for image loading, parameter adjustment, and features a scrollable canvas for exploring matched results. The core functionality employs OpenCV for image processing tasks such as keypoint detection, descriptor computation, and matching using a Brute Force Matcher with L2 norm. This tool is aimed at enhancing user interaction and analysis in computer vision applications. The fourth project creates a GUI for matching keypoints between images using the

AGAST (Adaptive and Generic Accelerated Segment Test) algorithm with BRIEF descriptors. Utilizing OpenCV for image processing and Tkinter for the interface, it initializes a window titled AGAST Image Matcher with a control_frame for buttons and sliders. Users can load two images using load_button1 and load_button2, which trigger file dialogs and display images on a scrollable canvas via load_image1(), load_image2(), and show_image(). Adjustable parameters include AGAST threshold and BRIEF descriptor bytes. Clicking match_button invokes match_images(), checking image loading, detecting keypoints with AGAST, computing BRIEF descriptors, and using BFMatcher for matching and visualization. The matched image, enhanced with color-coded lines, replaces previous images on the canvas, ensuring clear, interactive results presentation. The fifth project is a Python-based application that utilizes the AKAZE feature detection algorithm from OpenCV for matching keypoints between images. Implemented with Tkinter for the GUI, it features a AKAZE Image Matcher window with buttons for loading images and adjusting AKAZE parameters like detection threshold, octaves, and octave layers. Upon loading images via file dialog, the app reads and displays them ...

Memoirs of the Faculty of Engineering, Miyazaki University Miyazaki Daigaku. Kōgakubu,2012

Scale Invariant Feature Transform Fouad Sabry,2024-04-30 What is Scale Invariant Feature Transform SIFT, which stands for scale-invariant feature transform, is a method for computer vision that was developed by David Lowe in 1999. Its purpose is to identify, describe, and coincide with local features in images. Object recognition, robotic mapping and navigation, picture stitching, three-dimensional modeling, gesture recognition, video tracking, individual identification of wildlife, and match moving are some of the applications that can be used. How you will benefit (I) Insights, and validations about the following topics: Chapter 1: Scale-invariant feature transform Chapter 2: Edge detection Chapter 3: Scale space Chapter 4: Gaussian blur Chapter 5: Feature (computer vision) Chapter 6: Corner detection Chapter 7: Affine shape adaptation Chapter 8: Hessian affine region detector Chapter 9: Principal curvature-based region detector Chapter 10: Oriented FAST and rotated BRIEF (II) Answering the public top questions about scale invariant feature transform. (III) Real world examples for the usage of scale invariant feature transform in many fields. Who this book is for Professionals, undergraduate and graduate students, enthusiasts, hobbyists, and those who want to go beyond basic knowledge or information for any kind of Scale Invariant Feature Transform.

Vision Based Simultaneous Localization and Map Building Using Scale Invariant Feature Transform Thomas Lund Dideriksen,Casper Madsen,2005

Computer Vision Mr. Rohit Manglik,2024-07-28 EduGorilla Publication is a trusted name in the education sector, committed to empowering learners with high-quality study materials and resources. Specializing in competitive exams and academic support, EduGorilla provides comprehensive and well-structured content tailored to meet the needs of students across various streams and levels.

Inverse Scale Invariant Feature Transform Models for Object Recognition and Image Tagging Md. Kamrul

Hasan, 2009 This thesis presents three novel image models based on Scale Invariant Feature Transform (SIFT) features and the k-Nearest Neighbors (k-NN) machine learning methodology. While SIFT features characterize an image with distinctive keypoints, the k-NN filters away and normalizes the keypoints with a two-fold goal: (i) compressing the image size, and (ii) reducing the bias that is induced by the variance of keypoint numbers among object classes. Object recognition is approached as a supervised machine learning problem, and the models have been formulated using Support Vector Machines (SVMs). These object recognition models have been tested for single and multiple object detection, and for asymmetrical rotational recognition. Finally, a hierarchical probabilistic framework with basic object classification methodology is formulated as a multi-class learning framework. This framework has been tested for automatic image annotation generation. Object recognition models were evaluated using recognition rate (rank 1); whereas the annotation task was evaluated using the well-known Information Retrieval measures: precision, recall, average precision and average recall.

OpenCV with Python By Example Prateek Joshi, 2015-09-22 Build real-world computer vision applications and develop cool demos using OpenCV for Python About This Book Learn how to apply complex visual effects to images using geometric transformations and image filters Extract features from an image and use them to develop advanced applications Build algorithms to help you understand the image content and perform visual searches Who This Book Is For This book is intended for Python developers who are new to OpenCV and want to develop computer vision applications with OpenCV-Python. This book is also useful for generic software developers who want to deploy computer vision applications on the cloud. It would be helpful to have some familiarity with basic mathematical concepts such as vectors, matrices, and so on. What You Will Learn Apply geometric transformations to images, perform image filtering, and convert an image into a cartoon-like image Detect and track various body parts such as the face, nose, eyes, ears, and mouth Stitch multiple images of a scene together to create a panoramic image Make an object disappear from an image Identify different shapes, segment an image, and track an object in a live video Recognize an object in an image and build a visual search engine Reconstruct a 3D map from images Build an augmented reality application In Detail Computer vision is found everywhere in modern technology. OpenCV for Python enables us to run computer vision algorithms in real time. With the advent of powerful machines, we are getting more processing power to work with. Using this technology, we can seamlessly integrate our computer vision applications into the cloud. Web developers can develop complex applications without having to reinvent the wheel. This book will walk you through all the building blocks needed to build amazing computer vision applications with ease. We start off with applying geometric transformations to images. We then discuss affine and projective transformations and see how we can use them to apply cool geometric effects to photos. We will then cover techniques used for object recognition, 3D reconstruction, stereo imaging, and other computer vision applications. This book will also provide clear

examples written in Python to build OpenCV applications. The book starts off with simple beginner's level tasks such as basic processing and handling images, image mapping, and detecting images. It also covers popular OpenCV libraries with the help of examples. The book is a practical tutorial that covers various examples at different levels, teaching you about the different functions of OpenCV and their actual implementation. Style and approach This is a conversational-style book filled with hands-on examples that are really easy to understand. Each topic is explained very clearly and is followed by a programmatic implementation so that the concept is solidified. Each topic contributes to something bigger in the following chapters, which helps you understand how to piece things together to build something big and complex.

OpenCV Computer Vision Application Programming Cookbook Second Edition Robert Laganière, 2014-08-26 OpenCV 3 Computer Vision Application Programming Cookbook is appropriate for novice C++ programmers who want to learn how to use the OpenCV library to build computer vision applications. It is also suitable for professional software developers wishing to be introduced to the concepts of computer vision programming. It can also be used as a companion book in a university-level computer vision courses. It constitutes an excellent reference for graduate students and researchers in image processing and computer vision.

OpenCV Essentials Oscar Deniz Suarez, M^a del Milagro Fernández Carrobles, Noelia Vázquez Enano, Gloria Bueno García, Ismael Serrano Gracia, Julio Alberto Patón Incertis, Jesus Salido Tercero, 2014-08-25 This book is intended for C++ developers who want to learn how to implement the main techniques of OpenCV and get started with it quickly. Working experience with computer vision / image processing is expected.

Three Dimensional Shape Retrieval Using Scale Invariant Feature Transform and Spatial Restrictions Lydia Lei, 2009

Learning OpenCV 4 Computer Vision with Python 3 Joseph Howse, Joe Minichino, 2020-02-20 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.

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Scale Invariant Feature Transform Opencv Introduction

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