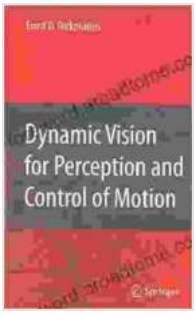
Dynamic Vision for Perception and Control of Motion: Unlocking the Secrets of Visual Information Processing

Dynamic vision is a rapidly growing field that investigates how the visual system processes information to perceive and control motion. This book provides a comprehensive overview of the latest research in dynamic vision, including topics such as:



Dynamic Vision for Perception and Control of Motion

by Ernst Dieter Dickmanns

★★★★★ 5 out of 5

Language	: English
File size	: 9914 KB
Text-to-Speech	: Enabled
Print length	: 492 pages

* Motion perception * Visual servoing * Eye movement control * Computational neuroscience * Applications in robotics and autonomous vehicles

This book is written for researchers and practitioners in the fields of computer vision, robotics, and computational neuroscience. It is also a valuable resource for students interested in learning about the latest advances in dynamic vision.

Motion Perception

The first part of the book covers motion perception. This section provides an overview of the different types of motion that can be perceived, as well as the computational models that have been developed to explain how these motions are processed.

One of the most important aspects of motion perception is the ability to track moving objects. This ability is essential for activities such as driving, walking, and playing sports. The book reviews the different tracking algorithms that have been developed and discusses their strengths and weaknesses.

Another important aspect of motion perception is the ability to judge the speed and direction of moving objects. This ability is essential for tasks such as catching a ball or avoiding a collision. The book reviews the different models that have been developed to explain how speed and direction are judged.

Visual Servoing

The second part of the book covers visual servoing. Visual servoing is a technique that uses visual information to control the motion of a robot or other device. This technique is used in a wide variety of applications, such as manufacturing, assembly, and surgery.

The book reviews the different types of visual servoing systems that have been developed. These systems can be classified into two main categories: image-based visual servoing and model-based visual servoing.

Image-based visual servoing systems use cameras to capture images of the scene. These images are then processed to extract information about

the position and orientation of the object being tracked. This information is then used to control the motion of the robot or other device.

Model-based visual servoing systems use a model of the scene to predict the position and orientation of the object being tracked. This information is then used to control the motion of the robot or other device.

Eye Movement Control

The third part of the book covers eye movement control. Eye movement control is essential for activities such as reading, driving, and playing sports. The book reviews the different types of eye movements that can be made and discusses the computational models that have been developed to explain how these movements are controlled.

One of the most important aspects of eye movement control is the ability to track moving objects. This ability is essential for activities such as driving and playing sports. The book reviews the different tracking algorithms that have been developed and discusses their strengths and weaknesses.

Another important aspect of eye movement control is the ability to make smooth and accurate saccades. Saccades are rapid eye movements that are used to shift the gaze from one point to another. The book reviews the different models that have been developed to explain how saccades are planned and executed.

Computational Neuroscience

The fourth part of the book covers computational neuroscience. Computational neuroscience is the study of the brain using computational

models. This field has been used to develop a variety of models that explain how the visual system processes information.

The book reviews the different computational models that have been developed to explain motion perception, visual servoing, and eye movement control. These models have provided important insights into how the brain processes visual information.

Applications in Robotics and Autonomous Vehicles

The fifth part of the book covers applications in robotics and autonomous vehicles. Dynamic vision is essential for robots and autonomous vehicles to navigate the world safely and efficiently. The book reviews the different applications of dynamic vision in these fields.

One of the most important applications of dynamic vision in robotics is visual servoing. Visual servoing is used to control the motion of robots by using visual feedback. This technique is used in a wide variety of applications, such as manufacturing, assembly, and surgery.

Another important application of dynamic vision in robotics is autonomous navigation. Autonomous navigation is the ability of a robot to navigate the world without human intervention. This ability is essential for robots that are used in search and rescue, exploration, and delivery.

This book provides a comprehensive overview of the latest research in dynamic vision. This field is rapidly growing and has the potential to revolutionize the way that we interact with the world around us. This book is an essential resource for researchers, practitioners, and students who are interested in learning more about dynamic vision.

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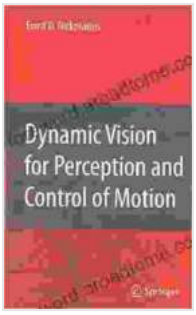

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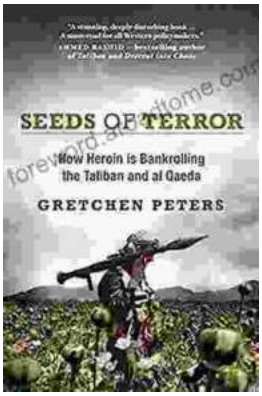

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