

## Three-dimensional Machine Vision (Hardback)

### Three-Dimensional Machine Vision

Takeo Kanade



Kluwer Academic Publishers

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### Reviews

*Definitely among the best book I have possibly read. I have study and i am sure that i will going to go through once more once more later on. Your lifestyle span is going to be convert when you full looking at this publication.*

*(Prof. Damon Kautzer III)*

## THREE-DIMENSIONAL MACHINE VISION (HARDBACK)

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Kluwer Academic Publishers, United States, 1987. Hardback. Book Condition: New. 1987 ed.. 234 x 156 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. A robot must perceive the three-dimensional world it is to be effective there. Yet recovering 3-D information from projected images is difficult, and still remains the subject of basic research. Alternatively, one can use sensors that can provide three-dimensional range information directly. The technique of projecting light-stripes started to be used in industrial object recognition systems as early as the 1970s, and time-of-flight laser-scanning range finders became available for outdoor mobile robot navigation in the mid-eighties. Once range data are obtained, a vision system must still describe the scene in terms of 3-D primitives such as edges, surfaces, and volumes, and recognize objects of interest. Today, the art of sensing, extracting features, and recognizing objects by means of three-dimensional range data is one of the most exciting research areas in computer vision. Three-Dimensional Machine Vision is a collection of papers dealing with three-dimensional range data. The authors are pioneering researchers: some are founders and others are bringing new excitements in the field. I have tried to select milestone papers, and my goal has been to make this book a reference work for researchers in three-dimensional vision. The book is organized into four parts: 3-D Sensors, 3-D Feature Extractions, Object Recognition Algorithms, and Systems and Applications. Part I includes four papers which describe the development of unique, capable 3-D range sensors, as well as discussions of optical, geometrical, electronic, and computational issues. Mundy and Porter describe a sensor system based on structured illumination for inspecting metallic castings. In order to achieve high-speed data acquisition, it uses multiple light-stripes with wavelength multiplexing. Case, Jalkio, and Kim also present a multi-stripe system and discuss various design issues in range sensing by triangulation. The numerical stereocamera developed by Altschuler, Bae, Altschuler, Dijak, Tamburino, and Woolford projects space-coded grid patterns which are generated by an electro-optical programmable spatial viii PREFACE light modulator. Kanade and Fuhrman present a proximity sensor using multiple LEDs which are conically arranged. It can measure both distance and orientation of an object surface.

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