   Nota di contenuto    Chapter 1 Autonomous Driving: The Challenges -- Chapter 2 3D Object
                        Detection -- Chapter 3 Lane Detection -- Chapter 4 Motion Planning
                        and Control -- Chapter 5 Positioning and Mapping -- Chapter 6
                        Autonomous Driving Simulator -- Chapter 7 Autonomous Driving Chip
                        -- Chapter 8 Deep Learning Model Optimization -- Chapter 9 Deep
                        Learning Chip Design -- Chapter 10 Autonomous Driving SoC Chip
                        Design -- Chapter 11 Autonomous Driving Operating System --
                        Chapter 12 Autonomous Driving Software Architecture -- Chapter 13
                        V2X.

   Sommario/riassunto   With the rapid development of artificial intelligence and the emergence
                        of various new sensors, autonomous driving has grown in popularity in
                        recent years. The implementation of autonomous driving requires new
                        sources of sensory data, such as cameras, radars, and lidars, and the
                        algorithm processing requires a high degree of parallel computing. In
                        this regard, traditional CPUs have insufficient computing power, while
                        DSPs are good at image processing but lack sufficient performance for

deep learning. Although GPUs are good at training, they are too "power-hungry," which can affect vehicle performance. Therefore, this book looks to the future, arguing that custom ASICs are bound to become mainstream. With the goal of ICs design for autonomous driving, this book discusses the theory and engineering practice of designing future-oriented autonomous driving SoC chips. The content is divided into thirteen chapters, the first chapter mainly introduces readers to the current challenges and research directions in autonomous driving. Chapters 2–6 focus on algorithm design for perception and planning control. Chapters 7–10 address the optimization of deep learning models and the design of deep learning chips, while Chapters 11-12 cover automatic driving software architecture design. Chapter 13 discusses the 5G application on autonomous drving. This book is suitable for all undergraduates, graduate students, and engineering technicians who are interested in autonomous driving.