1. Record Nr.   UNINA9910337605103321

   Autore   Yao Haipeng

   Titolo   Developing Networks using Artificial Intelligence / / by Haipeng Yao,
                       Chunxiao Jiang, Yi Qian

   Pubbl/distr/stampa Cham : , : Springer International Publishing : , : Imprint : Springer, ,
                       2019

   ISBN   3-030-15028-3

   Edizione   [1st ed. 2019.]

   Descrizione fisica 1 online resource (256 pages)

   Collana   Wireless Networks, , 2366-1186

   Disciplina   006.3

   Soggetti   Wireless communication systems
                       Mobile communication systems
                       Artificial intelligence
                       Computer networks
                       Wireless and Mobile Communication
                       Artificial Intelligence
                       Computer Communication Networks

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di contenuto   Preface vii -- Acknowledgements ix -- Table of Contents xi -- Chapter
                       1 Introduction 1 -- Chapter 2 Intelligence-Driven Networking
                       Architecture 13 -- Chapter 3 Intelligent Network Awareness 31 --
                       Chapter 4 Intelligent Network Control 79 -- Chapter 5 Intelligent
                       Network Resource Management 151 -- Chapter 6 Intention Based
                       Networking Management 191 -- Chapter 7 Conclusions and Future
                       Challenges 237 -- Index 241.

   Sommario/riassunto This book mainly discusses the most important issues in artificial
                       intelligence-aided future networks, such as applying different ML
                       approaches to investigate solutions to intelligently monitor, control and
                       optimize networking. The authors focus on four scenarios of
                       successfully applying machine learning in network space. It also
                       discusses the main challenge of network traffic intelligent awareness
                       and introduces several machine learning-based traffic awareness
                       algorithms, such as traffic classification, anomaly traffic identification
                       and traffic prediction. The authors introduce some ML approaches like

reinforcement learning to deal with network control problem in this book. Traditional works on the control plane largely rely on a manual process in configuring forwarding, which cannot be employed for today's network conditions. To address this issue, several artificial intelligence approaches for self-learning control strategies are introduced. In addition, resource management problems are ubiquitous in the networking field, such as job scheduling, bitrate adaptation in video streaming and virtual machine placement in cloud computing. Compared with the traditional with-box approach, the authors present some ML methods to solve the complexity network resource allocation problems. Finally, semantic comprehension function is introduced to the network to understand the high-level business intent in this book. With Software-Defined Networking (SDN), Network Function Virtualization (NFV), 5th Generation Wireless Systems (5G) development, the global network is undergoing profound restructuring and transformation. However, with the improvement of the flexibility and scalability of the networks, as well as the ever-increasing complexity of networks, makes effective monitoring, overall control, and optimization of the network extremely difficult. Recently, adding intelligence to the control plane through AI&ML become a trend and a direction of network development This book's expected audience includes professors, researchers, scientists, practitioners, engineers, industry managers, and government research workers, who work in the fields of intelligent network. Advanced-level students studying computer science and electrical engineering will also find this book useful as a secondary textbook. .