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With the emergence of revolutionary technological standards such as 5G and Industry 4.0, real time applications which require both cloud computing and machine learning are becoming increasingly common. Examples of such applications include real-time scheduling and resource allocation in cloud radio access networks, real-time process monitoring and control in industrial Internet of Things, network traffic analysis, short-term weather forecasting, and robotics. Given the increase in such applications, several cloud service providers such as Microsoft Azure Machine Learning, IBM Watson, and Google AI have started incorporating Artificial Intelligence (AI) applications on their platforms as well as providing Analytics as a Service. While it is now simple for users to deploy AI or machine learning algorithms using these cloud platforms, researchers from academia and industry can also develop their own machine learning applications and run them on these platforms to benefit from high processing power and global deploy ability. The main purpose of this book is to provide in-depth coverage of the programming methodologies and configurations required in developing real-time applications that require machine learning algorithms to be hosted on cloud computing platforms to leverage storage and computing resources. The real-time applications developed target network traffic analysis and weather forecasting systems. Several machine learning algorithms, namely multiple linear regression, K-Nearest-Neighbours, Multi-Layer-Perceptron, and Convolutional Neural Networks have been employed in the analysis. The programming languages used include Java, Javascript, HTML5 and MATLAB. Moreover, the Netbeans, Eclipse and Android studio IDEs have been used for developing desktop, web, and mobile apps as well as servlets. The use of several Application Programming Interfaces (APIs) to develop the desktop, mobile, and web apps have been fully elaborated. The main cloud platform used for the network analysis and weather forecasting systems is the IBM cloud, but Google Firebase, along with Node.js, have also been used in other examples of machine learning applications described in the book. In addition to hosting and running applications on the cloud, the setting up of local servers that can act as fog devices, using client-server sockets and network programming methodologies, has also been explained in detail. With detailed explanations on all fundamental concepts, programming techniques, and configuration steps in developing cloud hosted machine learning applications, this book will provide excellent guidance and a full hands-on experience to researchers, professionals and students working in this field.
