

acknowledgments

The journey of writing a book is an endeavor that's never solitary, and demands the involvement and encouragement of many individuals.

I want to begin by expressing my deepest gratitude to my family, who stood by me with unwavering patience and encouragement throughout the lengthy process of writing this book. My beloved wife, Nermein, and my children, Renad and Kareem, have been my pillars of support. Your patience during the long hours I dedicated to this project and your constant encouragement were the driving force behind my determination to see it through. I am truly fortunate to have you in my life. Nermein, in particular, not only provided emotional support but also played a crucial role in editing the book's graphics. Your collective strength and support fueled my determination and made this book possible.

I am deeply grateful to Mike Stephens, the book's acquisitions editor, whose belief in this book's vision was a cornerstone in bringing it to life. The exceptional efforts of Doug Rudder and Patrick Barb, the developmental editors, have greatly enhanced the quality of this book.

My thanks also extend to Frances Buontempo, the book's technical editor, who worked diligently to provide feedback that greatly improved the technical quality of the book. Your insights were crucial in ensuring the accuracy and clarity of the content. And a big thank you as well to review editors Adriana Sabo and Dunja Nikitović and to all the reviewers who provided feedback—Alain Couniot, Anne Katrine Falk, Ayush Bihani, Chris Thomas, Christoffer Fink, Dirk Gomez, Dwipam Katariya, Janit Anjaria, Jeremy Chen, Jesús Antonino Juárez Guerrrero, Joseph Pachod, Kevin Cheung, Khai Win, Kim Gabrielsen,

Laud Bentil, Maxim Volgin, Mikael Dautrey, Nick Vazquez, Onofrei George, Pablo Roccatagliata, Rani Sharim, Richard Vaughan, Ruben Gonzalez-Rubio, Sergio Govoni, Simon Tschöke, Thomas Jeffries, Vidhya Vinay, and Wei Luo. Your suggestions helped make this book what it is.

Special thanks to Andy Carroll, the book's copy editor, for his thorough review and invaluable edits, and to Andy Marinkovich, the production editor, for his dedication in moving the book through production. Thanks also to technical proofreader, Bin Hu, for his valuable contributions. Grateful appreciation also to proofreader, Melody Dolab, and typesetter, Bojan Stojanović, for their contributions to the book's quality and presentation. And many thanks to the cover designer, Marija Tudor, for her stunning design.

I extend my gratitude to the entire team at Manning for their professional guidance and assistance at every stage of putting this book together. Your commitment to excellence has made this endeavor all the more rewarding.

I must also express my gratitude to my friends, colleagues, and students for their unwavering support throughout this journey. In particular, I want to thank Yinan Wang for his significant contributions to the first part of the book, Dr. Mostafa Hassan for his valuable input in the second part of the book, and my students Jonah Ruan, Peiqi Li, Ahmed Elgazwy, and Yilun Li for their contributions to some of the coding exercises.

To all those mentioned here, and to anyone else who contributed in any way, your involvement has been instrumental in bringing this book to fruition. Thank you for being a part of this remarkable journey.