Learning OpenCV 4 Computer Vision with Python 3

Third Edition

Get to grips with tools, techniques, and algorithms for computer vision and machine learning

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Joseph Howse and Joe Minichino

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BIRMINGHAM - MUMBAI

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I dedicate my work to Sam, Jan, Bob, Bunny, and the cats, who have been my lifelong guides and companions.

– Joseph Howse

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Joseph Howse lives in a Canadian fishing village with four cats; the cats like fish, but they prefer chicken.

Joseph provides computer vision expertise through his company, Nummist Media. His books include *OpenCV 4 for Secret Agents*, *Learning OpenCV 4 Computer Vision with Python 3*, *OpenCV 3 Blueprints*, *Android Application Programming with OpenCV 3*, *iOS Application Development with OpenCV 3*, and *Python Game Programming by Example*, published by Packt.

> *I want to thank all the people who have shaped this book's three editions: the readers, my coauthor Joe Minichino, and the teams of editors, technical reviewers, and marketers. Above all, my family makes my work possible and I dedicate this book to them.*

Joe Minichino is an R&D labs engineer at Teamwork. He is a passionate programmer who is immensely curious about programming languages and technologies and constantly experimenting with them. Born and raised in Varese, Lombardy, Italy, and coming from a humanistic background in philosophy (at Milan's Università Statale), Joe has lived in Cork, Ireland, since 2004. There, he became a computer science graduate at the Cork Institute of Technology.

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Sri Manikanta Palakollu is an undergraduate student pursuing his bachelor's degree in computer science and engineering at SICET under JNTUH. He is a founder of the Open Stack Developer Community in his college. He started his journey as a competitive programmer. He loves to solve problems related to the data science field. His interests include data science, app development, web development, cyber security, and technical writing. He has published many articles on data science, machine learning, programming, and cyber security with publications such as Hacker Noon, freeCodeCamp, Towards Data Science, and DDI.

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