VOLKER KNECHT

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AI FOR PHYSICS

AI for **EVERYTHING** Series

CRC Press
Taylor & Francis Group

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Part II Machine-Learning the World from Subatomic to Cosmic Scales

AI for EVERYTHING SERIES

"Artificial intelligence is on a rapid path of revolutionizing science, upsetting long-established routines, and learning complex relationships in nature beyond what human minds can comprehend. *AI for Physics* hits the nail on the head in explaining how that is possible and where the future may take us. A great read for scientists and anybody else curious about how soon computers will be smarter than us."
—**Michael Feig**, Professor, Michigan State *University, USA*

"AI for Physics is a very recommendable, easy-to-read, and wide-ranging review of the very promising cooperation between artificial intelligence and many branches of physics. Very accessible language makes it a very good text for beginners in these subjects. It is also a very interesting read for those who, having some knowledge already, want to complete their view of the whole picture, and benefitting from many good references that make it easy to follow the reading with more specific texts."
—**Dr. Óscar de Abril**, *Associate Professor, Technical University of Madrid, Spain*

Written in accessible language without mathematical formulas, this short book provides an overview of the wide and varied applications of artificial intelligence (AI) across the spectrum of physical sciences. Focusing in particular on AI's ability to extract patterns from data, known as machine learning (ML), the book includes a chapter on important machine learning algorithms and their respective applications in physics. It then explores the use of ML across a number of important sub-fields in more detail, ranging from particle, molecular and condensed matter physics, to astrophysics, cosmology and the theory of everything. The book covers such applications as the search for new particles and the detection of gravitational waves from the merging of black holes, and concludes by discussing what the future may hold.