

1. Record Nr.	UNINA9910522940303321
Autore	Pietsch Wolfgang <1938->
Titolo	On the Epistemology of Data Science : Conceptual Tools for a New Inductivism / / by Wolfgang Pietsch
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2022
ISBN	3-030-86442-1
Edizione	[1st ed. 2022.]
Descrizione fisica	1 online resource (308 pages)
Collana	Philosophical Studies Series, , 2542-8349 ; ; 148
Disciplina	121
Soggetti	Technology - Philosophy Data structures (Computer science) Information theory System theory Computer science - Mathematics Mathematical statistics Analysis (Philosophy) Philosophy of Technology Data Structures and Information Theory Complex Systems Probability and Statistics in Computer Science Analytic Philosophy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Preface -- Chapter 1. Introduction -- Chapter 2. Inductivism -- Chapter 3. Phenomenological Science -- Chapter 4. Variational Induction -- Chapter 5. Causation As Difference Making -- Chapter 6. Evidence -- Chapter 7. Concept Formation -- Chapter 8. Analogy -- Chapter 9. Causal Probability -- Chapter 10. Conclusion -- Index.
Sommario/riassunto	This book addresses controversies concerning the epistemological foundations of data science: Is it a genuine science? Or is data science merely some inferior practice that can at best contribute to the scientific enterprise, but cannot stand on its own? The author proposes a coherent conceptual framework with which these questions can be

rigorously addressed. Readers will discover a defense of inductivism and consideration of the arguments against it: an epistemology of data science more or less by definition has to be inductivist, given that data science starts with the data. As an alternative to enumerative approaches, the author endorses Federica Russo's recent call for a variational rationale in inductive methodology. Chapters then address some of the key concepts of an inductivist methodology including causation, probability and analogy, before outlining an inductivist framework. The inductivist framework is shown to be adequate and useful for an analysis of the epistemological foundations of data science. The author points out that many aspects of the variational rationale are present in algorithms commonly used in data science. Introductions to algorithms and brief case studies of successful data science such as machine translation are included. Data science is located with reference to several crucial distinctions regarding different kinds of scientific practices, including between exploratory and theory-driven experimentation, and between phenomenological and theoretical science. Computer scientists, philosophers and data scientists of various disciplines will find this philosophical perspective and conceptual framework of great interest, especially as a starting point for further in-depth analysis of algorithms used in data science. .

---