



## A Theory of Natural Learning (Classic Reprint)

By Alexander Botta

Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Excerpt from A Theory of Natural Learning Unsupervised learning is based on capturing regularities in data. We formalize the vague notion of regularity using the concept of algorithmic information (Solomonoff, Chaitin, Koppel). We present a theory on how regularities are induced and accumulated. A generative model captures a regularity if it achieves compression. A basic regularity is a building block for hierarchical structures. We prove that a basic regularity may be identified as a local maximum in compressibility as a function of model complexity. Stepwise induction is a polynomial time approach to structures whose basic components have bound complexity. Agents engage in active learning. The regularities of their sensory-motor streams are similar to Piaget s schemes and constituents of an induced ontology. We illustrate these ideas on three microworlds. First are Moore automata. State representations are constructed incrementally from the results of tests performed when in that state, and from sequences of outputs perceived on the way to that state. The second world contains loosely coupled geometric objects. They are basic regularities identifiable by stepwise induction. In...

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