**Reader:** John Doe

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**Analysis of:** Title(s) of scientific product(s) (paper, monograph, book, dataset, software library)

**Abstract or Summary of chosen item:**

*Here You can place Your short summary of chosen paper or official abstract (e.g. from ArXiv). If the latter is too large, then insert a short copy of it.* ⇓

A comprehensive and self-contained introduction to Gaussian processes, which provide a principled, practical, probabilistic approach to learning in kernel machines.

**Analysis:**

*You should put analysis of a chosen paper here. Keep in mind that it must not exceed 2 pages!* ⇓

Gaussian processes (GPs) provide a principled, practical, probabilistic approach to learning in kernel machines. GPs have received increased attention in the machine-learning community over the past decade, and this book provides a long-needed systematic and unified treatment of theoretical and practical aspects of GPs in machine learning. The treatment is comprehensive and self-contained, targeted at researchers and students in machine learning and applied statistics. The book deals with the supervised-learning problem for both regression and classification, and includes detailed algorithms. A wide variety of covariance (kernel) functions are presented and their properties discussed. Model selection is discussed both from a Bayesian and a classical perspective. Many connections to other well-known techniques from machine learning and statistics are discussed, including support-vector machines, neural networks, splines, [1] ...

One issue with Gaussian process prediction methods is that their basic complexity is $\mathcal{O}\left(n^3\right)$ ...

A discrete-time autoregressive (AR) process of order p can be written as

$$X_t = \sum_{k=1}^{p} a_k X_{t-k} + b_0 Z_t \tag{1}$$

...For sufficiently well-behaved functions on R we have

$$f(x) = \int_{-\infty}^{\infty} \tilde{f}(s) e^{2\pi i s x} ds, \quad \tilde{f}(s) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i s x} dx \tag{2}$$

...Few more equations 3

$$\sum_{m=0}^{M} (-1)^m a_m \nabla^{2m} G = \delta\left(\mathbf{x} - \mathbf{x}'\right) \tag{3}$$

**References:**

[1] Carl Edward Rasmussen and Christopher K. I. Williams. *Gaussian Processes for Machine Learning*. Adaptive Computation and Machine Learning. OCLC: ocm61285753. Cambridge, Mass: MIT Press, 2006. 248 pp. ISBN: 978-0-262-18253-9.