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Bayesian Learning for Neural Networks

Artificial "neural networks" are widely used as flexible models for classification and regression applications, but questions remain about how the power of these models can be safely exploited when training data is limited. This book demonstrates how Bayesian methods allow complex neural network models to be used without fear of the "overfitting" that can occur with traditional training methods. Insight into the nature of these complex Bayesian models is provided by a theoretical investigation of the priors over functions that underlie them. A practical implementation of Bayesian neural network learning using Markov chain Monte Carlo methods is also described, and software for it is freely available over the Internet. Presupposing only basic knowledge of probability and statistics, this book should be of interest to researchers in statistics, engineering, and artificial intelligence.

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