

Probabilistic Approaches to Neural Networks: Uncertainties and Relevance

Abstract

We start by introducing and reviewing some recent approaches to probabilistic neural networks. This includes using randomness in the network input as well as having random network weights. These ideas were originally developed in the context of uncertainty quantification of neural network predictions.

In the second part of the talk we get back to the topic of last weeks talks, that is the task of determining the most relevant components of an input signal for a networks prediction. We see how some of the previously discussed probabilistic methods can be used within a heuristic approach to solving the relevance mapping problem.

This is joint work with Gitta Kutyniok, Stephan Wäldchen, and Sascha Hauch.