

## **Title:** Convergence and Robustness of Gaussian Process Regression

**Abstract:** We are interested in the task of estimating an unknown function from data, given as a set of point evaluations. In this context, Gaussian process regression is often used as a Bayesian inference procedure, and we are interested in the convergence as the number of data points goes to infinity. Hyper-parameters appearing in the mean and covariance structure of the Gaussian process prior, such as smoothness of the function and typical length scales, are often unknown and learnt from the data, along with the posterior mean and covariance. We work in the framework of empirical Bayes', where a point estimate of the hyper-parameters is computed, using the data, and then used within the standard Gaussian process prior to posterior update. Using results from scattered data approximation, we provide a convergence analysis of the method applied to a fixed, unknown function of interest.