
Active Structure Discovery

for Gaussian Processes

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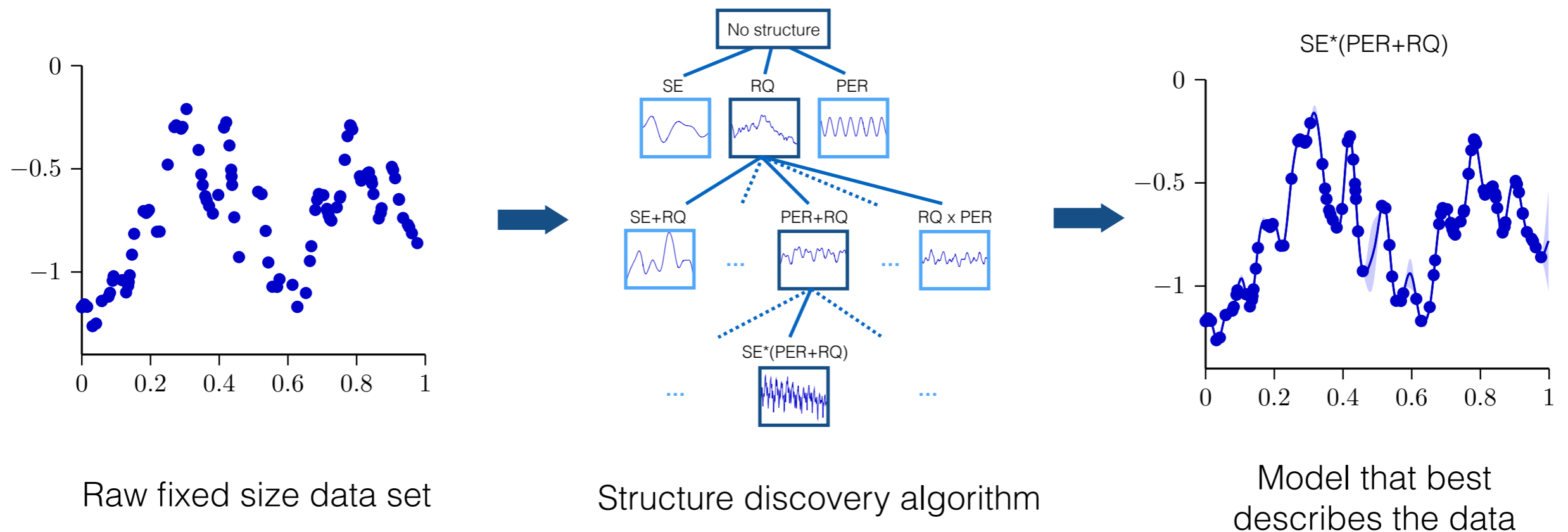


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Structure Discovery

Duvenaud et al., ICML, 2013

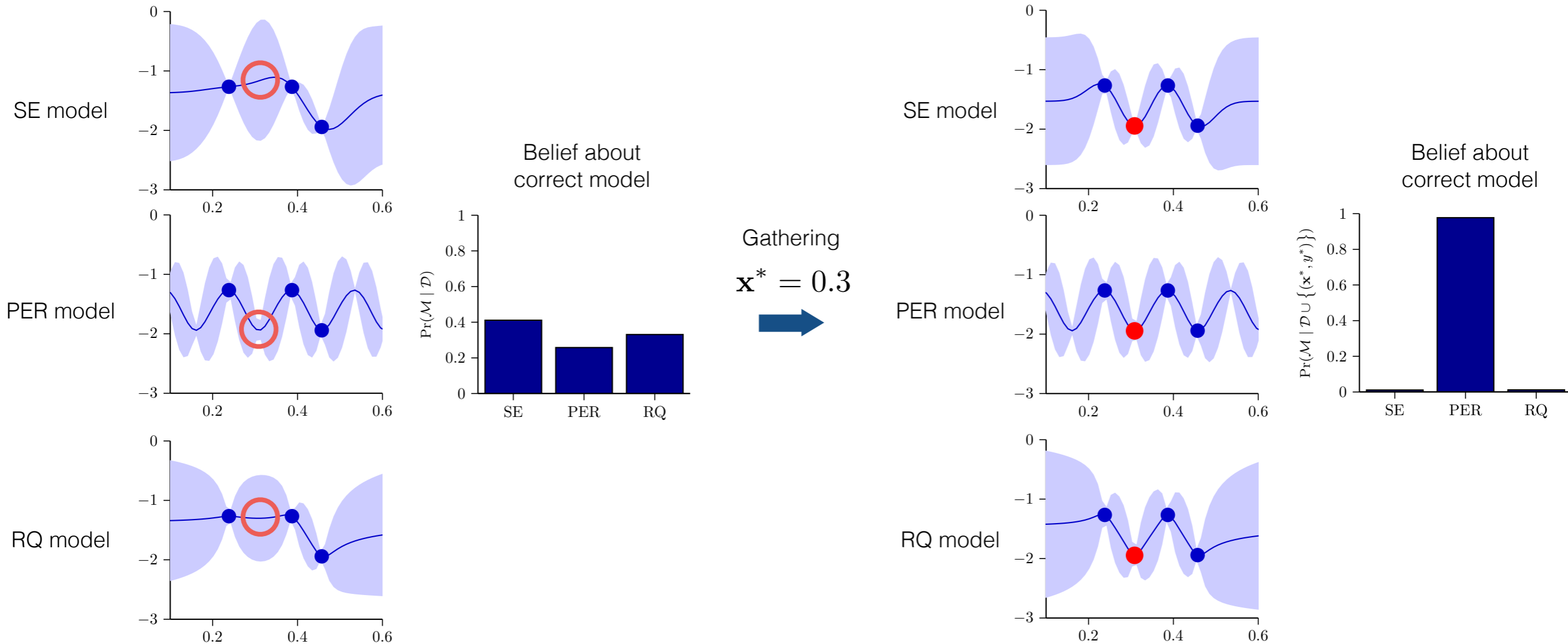


Automatic statistician project

Lloyd et al., AAAI, 2014

Active Structure Discovery

Extension for **active learning** (labeling is expensive)



Automatic experimenter

The goal is to gather **new data intelligently** so as to **learn the appropriate model quickly**

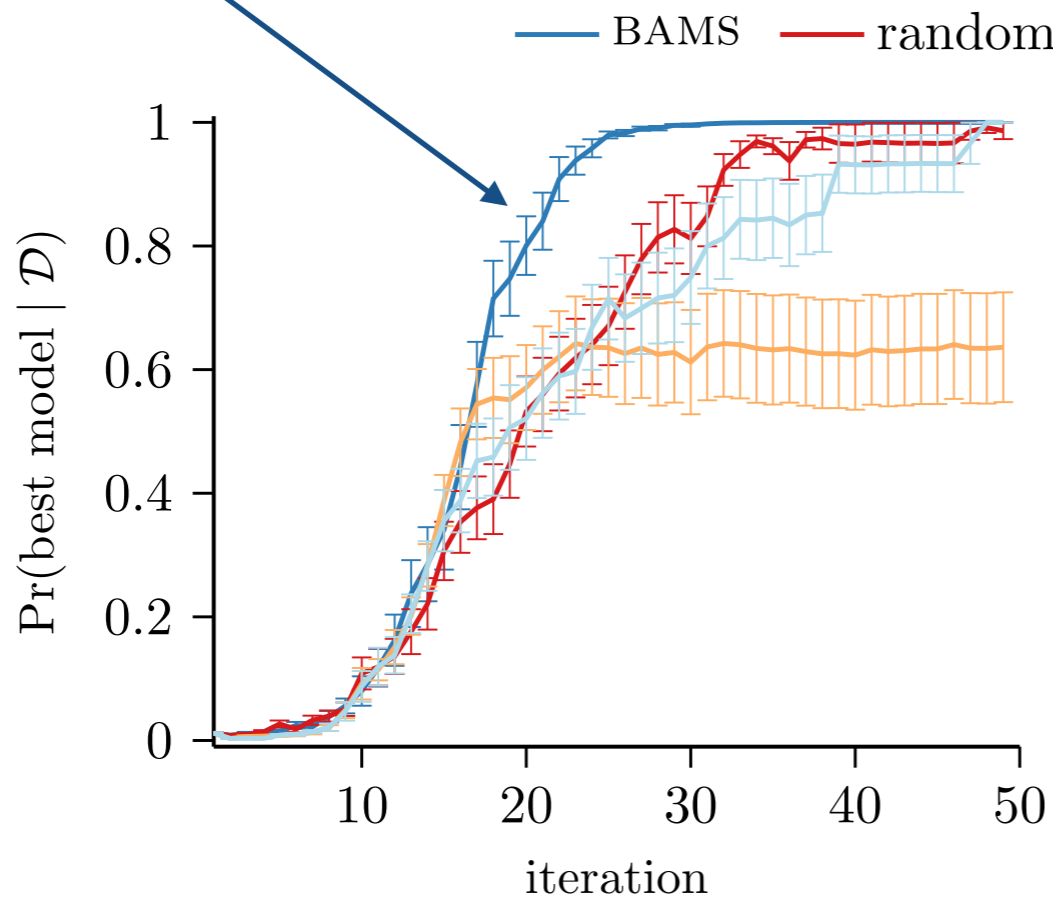
Bayesian Active Model selection

We propose a novel **active model selection** approach based on maximizing the **mutual information** between the **output variable** and the **model class**.

Our approach **does not require model-retraining** for probing the next point.

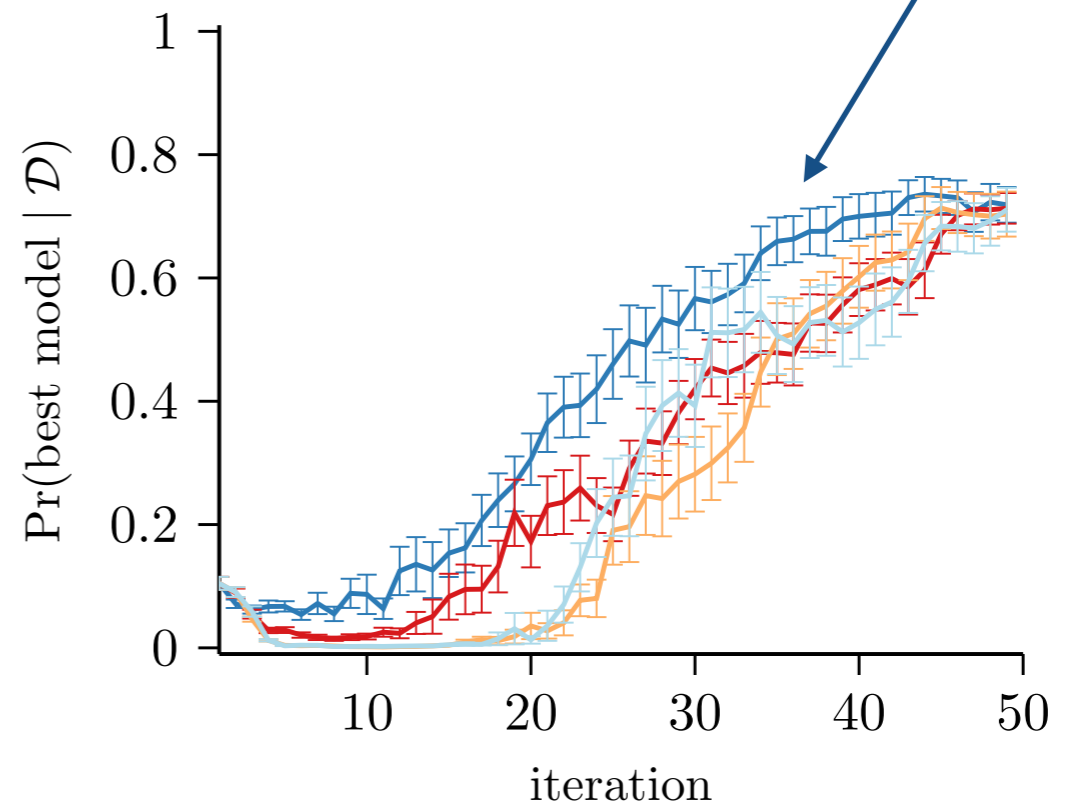
Initial Results

Our method



Airline data set

Our method



Mauna Loa atmospheric CO₂

Thanks!