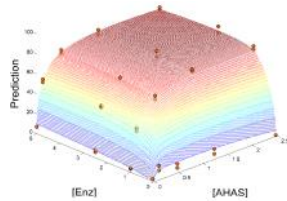




Lars Freier Hybrid mechanistic-empirical modeling of enzyme catalyzed processes

Data Analysis



Kriging

$$\hat{y}^*(\mathbf{x}) = \hat{y}(\mathbf{x}) + \epsilon(\mathbf{x})$$

$$E[\hat{y}^*(\mathbf{x}) - \hat{y}(\mathbf{x})] = 0$$

$$\text{Var}(\hat{y}^*(\mathbf{x}) - \hat{y}(\mathbf{x})) \rightarrow \min$$

Biotechnology processes are generally complex functions of several unknowns. Mechanistic models can hardly take all impact factors into account. Hence, we apply the Kriging approach to combine mechanistic models for describing major impact factors with empirical models for describing the remaining discrepancies between trend functions and measurements. This approach will be combined with different optimization algorithms for model-based data analysis and process design.