

## gaussianProcessRegression

Function module which implements regression models with Gaussian Process. Implemented regression models possess the ability to process training and test datasets by sensor array simulation. The model creation can be bound into scripts by use of `initGPR` and `tuneKernel` for simple optimized models. A fully generalized regression model is supported by use of `optimGPR` to create models which are tuned on training data and generalized on test data.

### **basicMathFunctions**

---

Submodule which contains basic math function to module functionality.

### **kernelQFC**

---

Submodule which contains quadratic fractional covariance implementation.

### **kernelQFCAPX**

---

Submodule which contains approximated quadratic fractional covariance implementation.

### **initGPR**

---

Initializes regression model by training dataset and config dataset. Resulting model is not optimized.

### **initGPROptions**

---

Attaches configuration to regression model including default parameters and bounds.

### **initTrainDS**

---

Initiates the training data, reference angles and regression targets on regression model.

### **initKernel**

---

Initiates kernel submodules by made configuration.

### **initKernelParameters**

---

Initiates the regression model by its set configuration done initiating steps before.

### **tuneKernel**

---

Tunes initiated regression model hyperparameters.

### **computeTuneCriteria**

---

Computes min criteria for `tuneKernel`.

### **predFrame**

---

Predicts single test data frame.

### **predDS**

---

Predicts a whole test dataset at once.

### **lossDS**

---

Computes prediction losses and errors of a test dataset at once.

### **optimGPR**

---

Computes optimized regression model.

## **computeOptimCriteria**

---

Computes min criteria for optimGPR.

## **See Also**

---

- [generateConfigMat](#)
- [demoGPRModule](#)
- [investigateKernelParameters.html](#)
- [generateSimulationDatasets.html](#)

Created on February 15, 2021 by Tobias Wulf. Copyright Tobias Wulf 2021.

---

*Published with MATLAB® R2020b*