**Hyperparameter SVGP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | SE | SE | SE | SE |
| Loss function | ELBO | ELBO | ELBO | ELBO |
| Optimizer | Adam | Adam | Adam | Adam |
| Batch size | 100 | 100 | 100 | 100 |
| Inducing set size | 128 | 32 | 32 | 32 |
| Learning rate | 0.001 | 0.001 | 0.001 | 0.001 |

Trong đó SE: SquaredExponential

**Hyperparameter FITC**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | SE | SE | SE | SE |
| Loss function | ELBO | ELBO | ELBO | ELBO |
| Optimizer | Minimize | Minimize | Minimize | Minimize |
| Inducing set size | 32 | 32 | 32 | 32 |

**Minimize** by Carl Rasmussen (python implementation of "minimize" in GPML), minimizes the negative log marginal likelihood

**Hyperparameter SGPR**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | SE | SE | SE | SE |
| Loss function | ELBO | ELBO | ELBO | ELBO |
| Optimizer | Scipy | Scipy | Scipy | Scipy |
| Inducing set size | 48 | 96 | 32 | 32 |

Trong đó SE: SquaredExponential

**Hyperparameter fvGP (NoAck)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | wendland\_anisotropic | wendland\_anisotropic | wendland\_anisotropic | wendland\_anisotropic |
| Batch size | 400 | 400 | 5000 | 5000 |
| Optimizer | Global optimization using a genetic algorithm | MCMC | Global optimization using a genetic algorithm | Global optimization using a genetic algorithm |
| Max iterations | 128 | 40 | 8 | 20 |

Optimizer: MCMC (Markov-Chain-Monte-Carlo)

**Hyperparameter KISS GP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | GridInterpolationKernel | GridInterpolationKernel | GridInterpolationKernel | GridInterpolationKernel |
| Loss function | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood |
| Optimizer | Adam | Adam | Adam | Adam |
| Batch size | 100 | 100 | 100 | 100 |
| Learning rate | 0.1 | 0.1 | 0.1 | 0.1 |

**Hyperparameter BBMM**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hyperparameter** | **Dataset** | | | |
| **1D** | **Climate** | **3D Road** | **Bike Sharing** |
| Kernel | MaternKernel | MaternKernel | MaternKernel | MaternKernel |
| Loss function | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood | ExactMarginalLogLikelihood |
| Optimizer | Adam | Adam | Adam | Adam |
| Learning rate | 0.1 | 0.1 | 0.1 | 0.1 |