

Bayesian neural networks for active learning Douphine IPSLE

Applications to gravitational-wave source population inference



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- Learn **surrogate** model of costly simulations
- Overcome high computational cost of simulations
- Optimize training dataset structure

Applications :

- Regression with intermediate dimension data
- Automatic dataset generation
- "No human in the loop"

How to choose the next point ?

regression

- Bayesian neural networks
- Estimate posterior distribution with **MCMC**
- Sample models from the posterior distribution
- Compute **uncertainty** on prediction
- Choose the least confident point





García et al, Progenitors of low-mass binary black-hole mergers in the isolated binary evolution scenario, 2021