

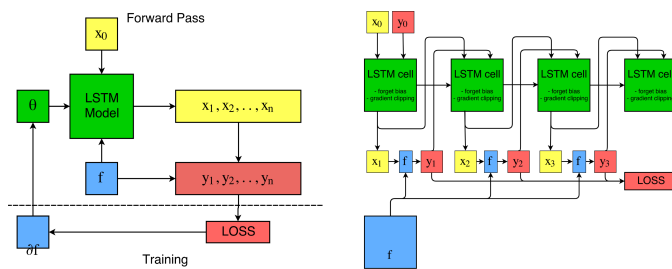
Blackbox Optimization using LSTMs

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Summary

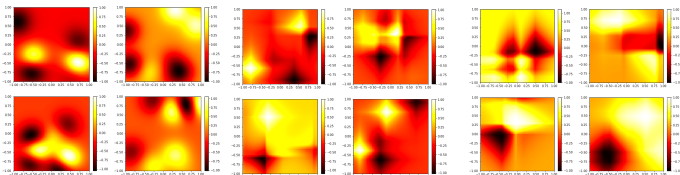
We present a new way of optimizing black box functions...

Model



LSTMs explanation

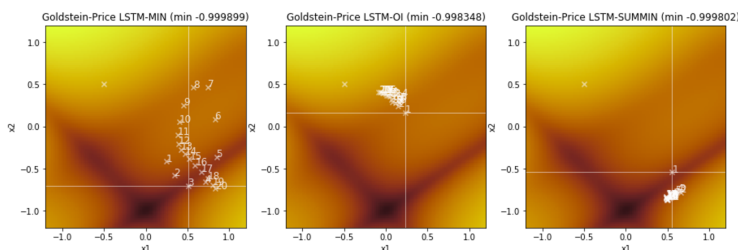
Training Data



RBF Matern Airfoil Prior
GP functions on different kernels

Training Data: Gaussian Processes, different Kernels

Comparison of Loss Functions

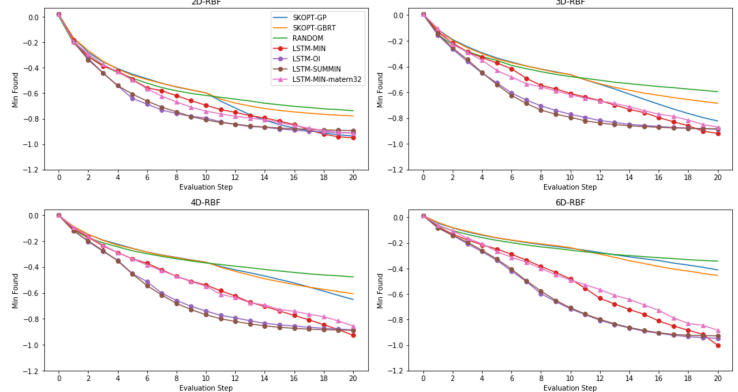


The model learns different optimization techniques depending on the loss function.. exploration/exploitation trade off..

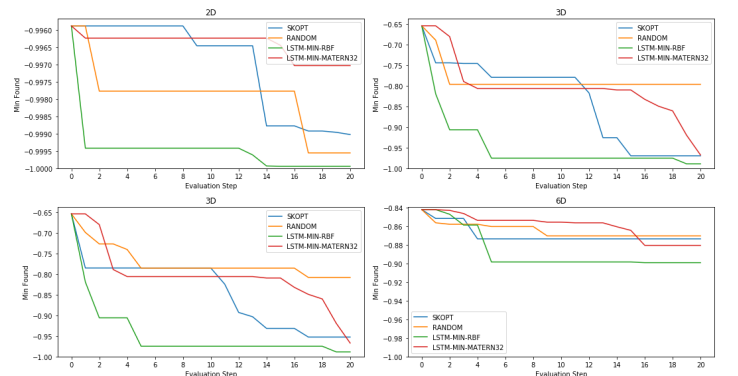
Loss functions and equations

- min
- sum
- OI

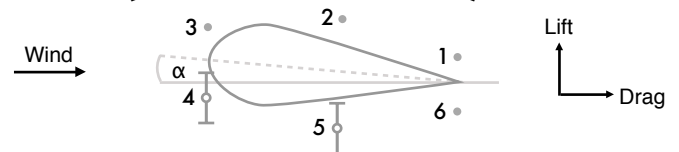
Results on Test Functions



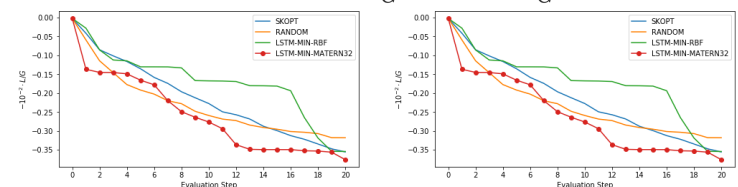
Results on Benchmark Functions



Results (on Airfoil data)



$$\text{Goal : } \max \frac{L}{G} \approx \min -\frac{L}{G}$$



Conclusions

- Neque porro quisquam est qui dolorem ips
- Neque porro quisquam est qui dolorem ips

References

- [1] Andrychowicz, Marcin, et al. "Learning to learn by gradient descent by gradient descent." Advances in Neural Information Processing Systems. 2016.
- [2] Mockus, Jonas. "The Bayesian approach to global optimization." System Modeling and Optimization (1982): 473-481.
- [3] Hochreiter, Sepp, and Jürgen Schmidhuber. "Long short-term memory." Neural computation 9.8 (1997): 1735-1780.

$$y_{\{ 2 \leq i < 6 \}} = [-1,1]$$

$$\alpha = [-5,5]$$