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Project in Computational Science
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Time vs Result

ABB's Model Predictive Control Optimization

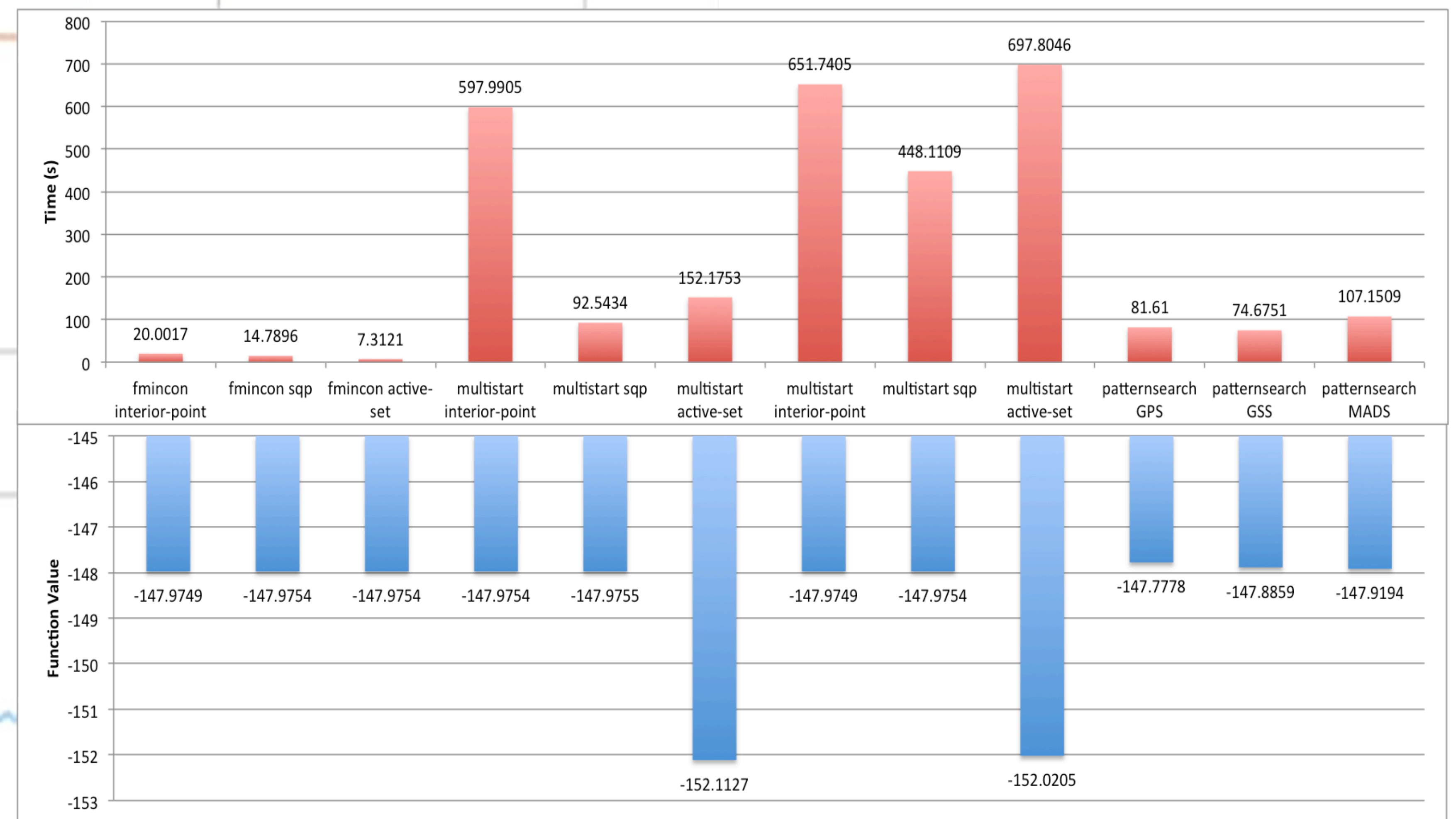
To achieve a robust system, ABB's Model Predictive Control (MPC) uses tuning parameters obtained by minimizing objective functions which measure the system's performance and sensitivity.

Goal

- ☑ Use different Matlab solvers at given MPC problems from ABB.
- ☑ Minimize the objective functions.
- ☑ Compare minimum function value and CPU time

Method

Ten pseudo-random initial points are generated from *Sobol* distribution. These points are normalized and used to optimize objective function using Matlab solvers : **fmincon**, **multistart**, **globalsearch** and **patternsearch**. Minimum objective function value and average CPU time for each solver are obtained as benchmark data.



Performance chart for $J = \max(J_s)$ objective function of Tank problem

Conclusion

Multistart excels at most of objective functions in terms of minimum function value and CPU time.