

FORCES PRO 4.0 Release

FORCESPRO

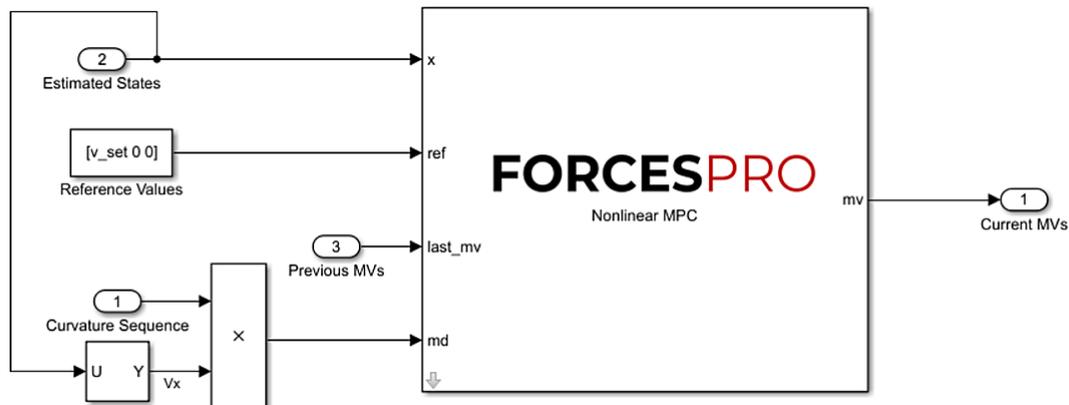
Nonlinear MPC can now be designed and deployed on hardware with MathWorks Model Predictive Control Toolbox™ using FORCESPRO as solver

- **MATLAB® plugin:** In a collaborative development effort with [The MathWorks, Inc.](#) we have significantly enhanced the MATLAB® plugin for FORCESPRO to support **Nonlinear MPC**. Starting with the recent versions R2020a and R2020b, users can design nonlinear model predictive controllers in their accustomed MATLAB workflows with the powerful capabilities of the [Model Predictive Control Toolbox™](#). The resulting optimization problem can be solved with the computational performance and numerical robustness of the FORCESPRO solver. Both, our Interior Point solver as well as the SQP solver can be chosen as a solution method, and can be easily deployed on hardware such as dSPACE MicroAutoBox II and Speedgoat. The interface also comes with full Simulink® block generation support. This novel toolchain makes real-world application of MPC for demanding control problems straightforward.



- **Demo of MATLAB® plugin:** For quick, hands-on testing users can

find several examples in the [DOCU](#). One example deals with ADAS (lane following) [using Nonlinear MPC](#). The example is based on a nonlinear ODE with 7 states and a prediction horizon of $N=10$. With the FORCESPRO solver the optimization problem can be solved with a **computation time of 3.9 msec**. The demo also shows how to deploy the algorithm on Speedgoat target hardware.



- New Licensing Model:** FORCESPRO is now offered in three variants. This allows you to buy more cost-effective licenses if you need a solver for convex problems or if you use the SQP solver. Users who apply the Interior Point solver for NLP problems pay the same price as before.

The FORCESPRO license table provides an overview of optimization problems that can be solved with the FORCESPRO variants S, M, L:

S	LP, QP, QCQP
M	LP, QP, QCQP, Binary Integer QP, NLP with SQP
L	LP, QP, QCQP, Binary Integer QP, NLP with SQP and IP solver, Mixed Integer NLP

Existing customers are using the product variant “L”.

A list of all algorithmic improvements can be found in the [Release Notes of FORCESPRO 4.0](#)

Existing users can easily switch to the new version by using our [auto-update function](#).

Alternatively, you can use the **new server** at:

<https://forces-4-0-0.embotech.com/>

Note: Version 1.9.1 will go offline as of October 1, 2020.

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