

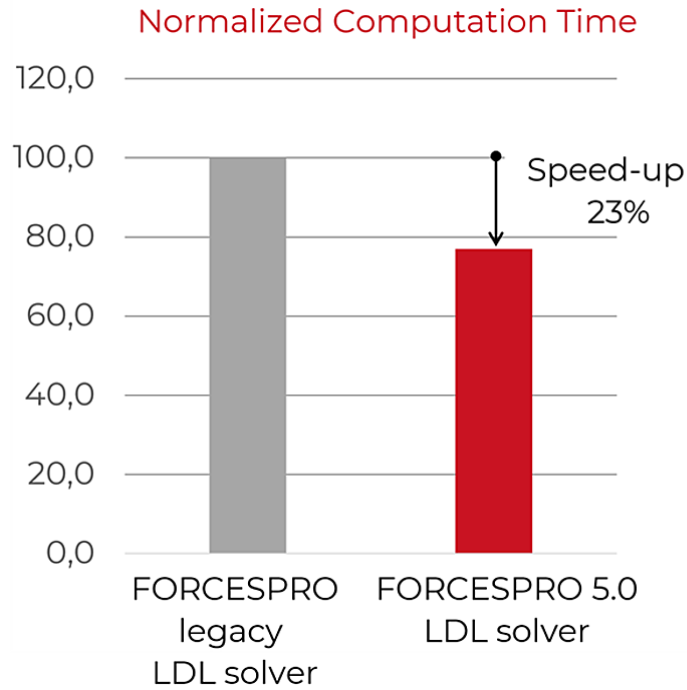
## FORCESPRO 5.0 Release

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# FORCESPRO

### **New linear algebra solver combines robustness and speed**

- **New linear algebra solver**: One core element of interior point solvers for nonlinear programs (NLP) is the linear algebra routine. FORCESPRO 5.0 comes with an improved LDL option to solve the linear system. The option combines superior robustness properties with fast computation times. The updated LDL option benefits Nonlinear Model Predictive Control (NMPC) applications with challenging system dynamics and requirements.
- **Speed-ups for automated driving example**: The updated LDL option is suited for applications such as automated driving. Compared to the previous most robust option, the computation times of NMPC applications are significantly lowered while achieving the same robustness properties. For example, the computation time of an automated driving example, which is run on an Intel Atom, is reduced by 23%.



- **Minimum snap trajectory:** FORCESPRO 5.0 is shipped with a new trajectory generation example of a micro aerial vehicle. More specifically, a minimum snap trajectory in cartesian coordinates is calculated. The result is a piece-wise polynomial trajectory respecting the system dynamics and a safe flight corridor via bounding boxes. The computational efficiency of the FORCESPRO solver results in a computation time of only 5.5 ms.
  
- **Support of Python 3.9:** You can also use the new FORCESPRO version to generate the solver with Python 3.9.
  
- **Support of CasADi v3.5:** FORCESPRO 5.0 uses CasADi v3.5.5 for MATLAB® and Python as default AD tool.

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**Note:** FORCESPRO 5.0 uses a new API for increased availability of the client-server communication. All necessary changes happen automatically. If you encounter any problems, please contact [support@embotech.com](mailto:support@embotech.com)

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You can find a list of all algorithmic improvements in the [Release Notes of FORCESPRO](#).

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-5-0-0.embotech.com>

You can find a list of settings for maintaining code options of old FORCESPRO versions in the [legacy list](#).

**Note:** Version 4.0.0 will go offline as of September 30, 2021.

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