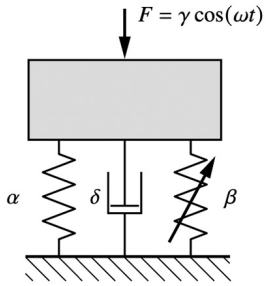
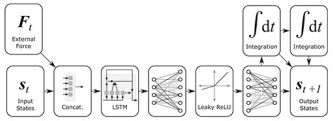
Chair of Applied Mechanics
Department of Mechanical Engineering
Technical University of Munich

Multibody Simulation Solver Pre-Conditioning using Neural Networks

Bachelor's Thesis/ Semester Thesis/ Master's Thesis

One approach for calculating the dynamics of a multibody system involves the use of Newton iterations to sucessively reduce the residual of the EOMs for each simulation step. This process is especially computationally expensive if the starting point for the iterations is far from the correct solution. This thesis will explore the idea of using a Neural Network to cheapely create a "good enough" guess which then only requires a few iterations to correct. After implementing the approach an analysis will be conducted to determine under which circumstances this leads to a reduction in simulation time.





Topics
- Multibody Models
- Machine Learning
- Flexible Bodies
- Simulation Acceleration

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