Lehrstuhl für Elektrische Energiesysteme

Friedrich-Alexander-Universität
Technische Fakultät

Dynamic Model Validation of a Restoration Cell in Switzerland

Master Thesis

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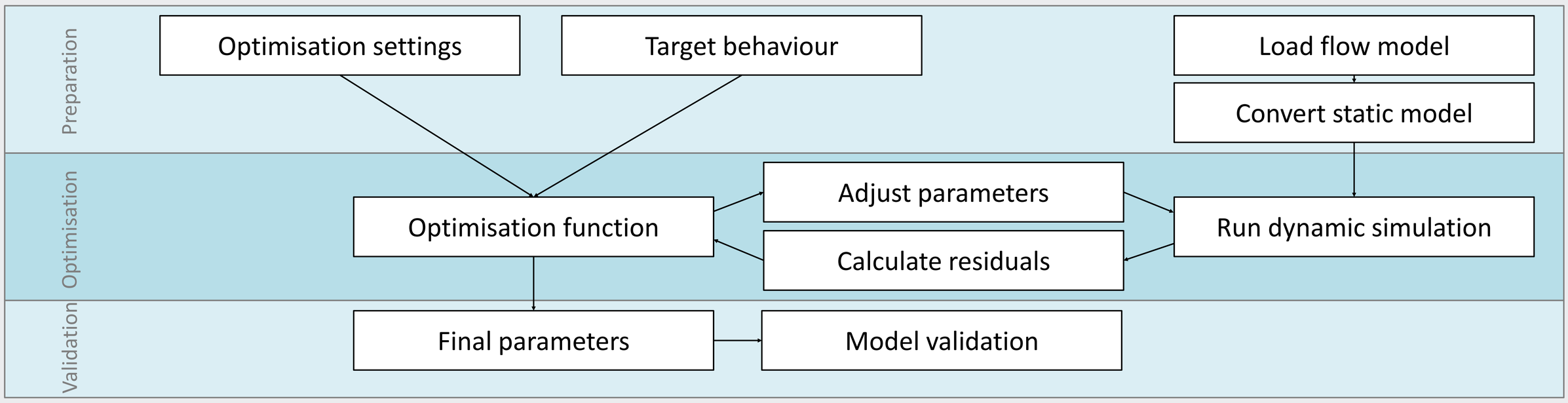
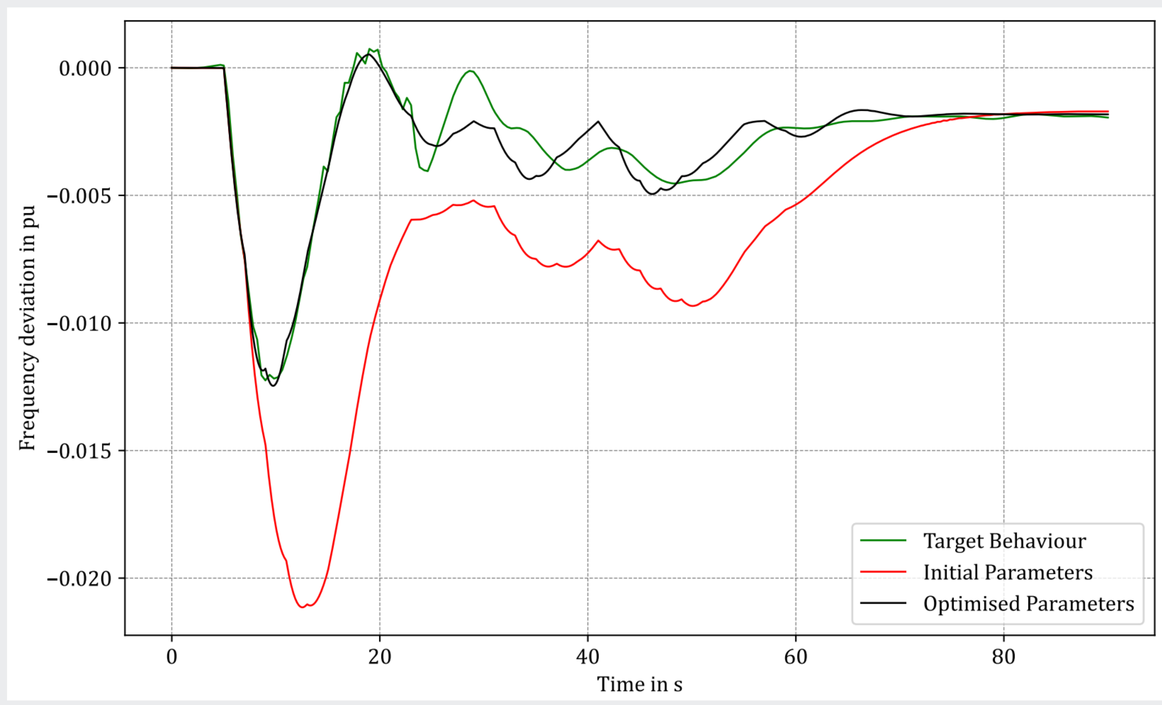
Motivation:

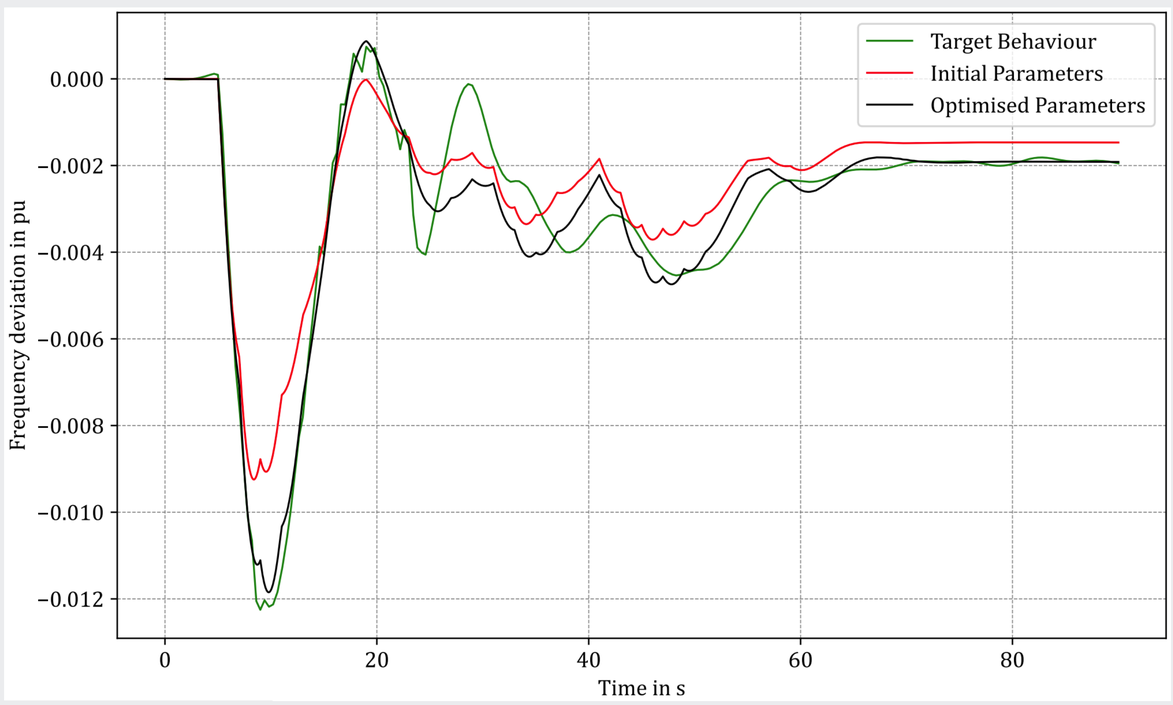
A lack of information on device parameters for dynamic simulations leads to unreliable study results. Therefore, a method for automatic parameter calibration and validation using measurement data was developed for a power system restoration cell in Switzerland. The target function was the frequency behaviour after a pump soft start for the calibration of hydro governor parameters. Resulting parameters can be applied in studies on the restoration cell, for example to determine the maximum admissible load step.

Proposed Calibration Script:



Calibration of the HYGOV and the HYGOVM hydro governor models:

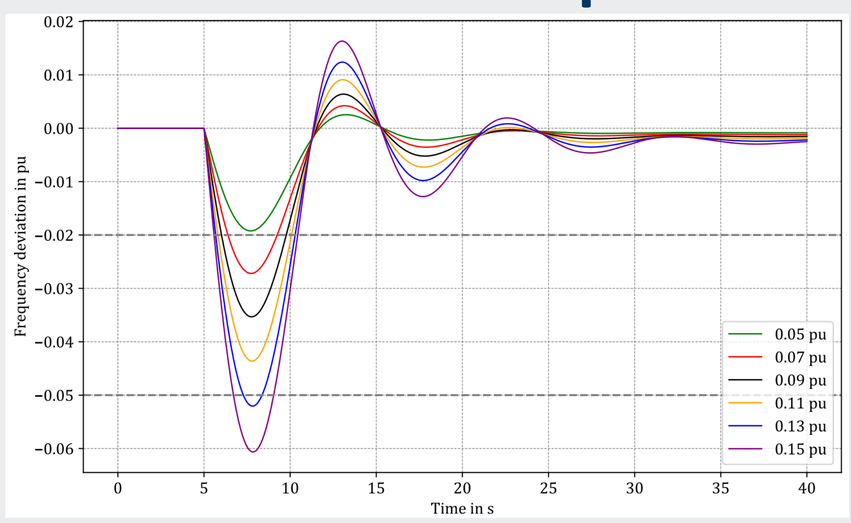




Conclusions:

- Calibrate only parameters having a significant influence on the target value
- Strong dependence of the result on initial parameter values
- When parameter boundaries are not given, the influence a parameter has on the cost function has to be accounted for by scaling
- Calibrations of simplified models can be used as a starting point for calibrations of more detailed models

Determine the maximum admissible load step:



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PSS®E EMTP MATLAB SIMULINK

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