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The uncertainty learning filter: a revised smooth variable structure filter

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Highlights

- An advanced version of smooth variable structure filter denoted as uncertainty learning filter is proposed for state estimation of nonlinear system in case of imprecise model description.
- Dependencies of the estimation performance on parameters can be avoided by introducing an uncertainty learning parameter which can be adapted online.
- The uncertainty learning parameter has the capability to tune the proposed filter according to the uncertainties present in the current model description.
- Boundedness of estimation error is proven for the adaptive filtering approach.

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