

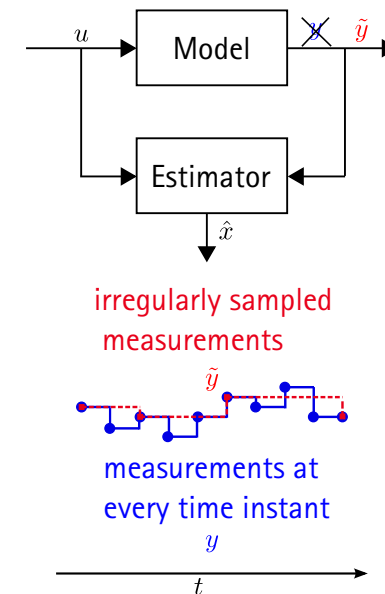
## Bachelor-/Masterthesis

### Sample-based observability and state estimation

In many cases designing appropriate control strategies require the knowledge of the internal state of the system. In practice usually the input and the output of the system is known. However the internal state cannot be directly measured. Therefore it needs to be reconstructed by a state estimator.

Classical designs of state estimators require continuous measurement or in case of discrete-time state estimators measurements at every time instant. Considering cases where continuous sensing is very expensive or only a few and/or irregular measurements are available, new methods for state estimation using only this limited information are needed. Current research directions investigate under which conditions on, e.g., the system dynamics and the measurement sampling scheme the internal state (observability) or at least the unstable part of the internal state (detectability) can be reconstructed.

Related Bachelor-/Masterthesis topics heavily involve theoretical work. Possible theses could focus on the analysis and development of sampling schemes for certain system classes. Interested students should have theoretical foundations in both mathematics and control theory.



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