

Innovations in Likelihood-Based Inference for State Space Models

Oral Defense

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1. Introduction

There are several terms that have been used as synonyms with state space models (SSMs):

- Mechanistic model
- Hidden Markov model (HMM)
- Partially observed Markov process (POMP) model

I chose SSM as it is the terminology often preferred by practitioners.

I Follow the definition used by Durbin and Koopman (2012) for a SSM.

- Let Y_1, \dots, Y_N be random variable representing the observed time series.
- A SSM introduces unobservable states X_1, \dots, X_N .

2. Likelihood Maximization for ARMA models

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3. Informing Policy via Dynamic Models: Cholera in Haiti

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4. Concluding Remarks

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\begin{frame}[standout, plain]{Thank You !}  
Questions ?  
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Et voilà !

5. The Marginalized Panel Iterated Filter (MPIF)

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6. References

Durbin, J. and S. J. Koopman (2012). *Time Series Analysis by State Space Methods*, Volume 38. OUP Oxford.