

Multi-level state space models

Annual DECIDE worksop on state space models 2023

Monday	Tuesday	Wednesday	Thursday	Friday
10:00-10:30 Welcome (ARK) 10:30-12:00 Course introduction (LVdK) <ul style="list-style-type: none"> - Principles of data filtering - Overview of state space models - DLM, basic concepts - Transformation of data 	9:00-10:00 Linear algebra – brush up (LVdK) 10:00-12:00 Multi-level models (ARK): <ul style="list-style-type: none"> - Modeling a hierarchical structure - Estimation techniques - Monitoring at multiple levels 	10:00-12:00 Estimation of variance components (ARK): <ul style="list-style-type: none"> - EM algorithm - Linear model with repeated measurements - Minimization of forecast errors - Use of discount factors 	10:00-12:00 Early warning systems based on DLMs (LVdK): <ul style="list-style-type: none"> - Analysis of forecast errors (Shewhart control charts and CuSums) - Naïve Bayes' classifiers - Multi-process models 	9:00-10:00 Work with own data <ul style="list-style-type: none"> - Finishing presentation 10:00-12:00 Presentation of results from working with own data
12:00-13:00 Lunch	12:00-13:00 Lunch	12:00-13:00 Lunch	12:00-13:00 Lunch	12:00-13:00 Lunch
13:00-15:00 Data patterns (DBJ) <ul style="list-style-type: none"> - Trends - Harmonic waves 15:00-16:30 Participants present their data	13:00-15:30 Work with own data: <ul style="list-style-type: none"> - Variable(s) to monitor - Identification of hierarchical structure - Model for monitoring - Matrix structure 15:30-16:30 Plenum discussion of data and analyses	13:00-15:30 Work with own data: <ul style="list-style-type: none"> - Learning and test sets - Programming in R - Choice of estimation technique - Estimation 15:30-16:30 Plenum discussion of data and analyses	13:00-16:30 Work with own data: <ul style="list-style-type: none"> - Monitoring at several levels - Implementation of early warning - Preparing presentation 	13:00-14:00 Evaluation and Goodbye