Dynamic Generalized Linear Models (DGLMs)

Annual DECIDE worksop on state space models 2024, 23rd – 27th of September

Monday	Tuesday	Wednesday	Thursday	Friday

10:00-10:30
Welcome (DBJ)
 	
10:30-12:00
Course introduction (LVdK)
- Principles of data filtering
- Overview of state space models
- DLM, basic concepts
- Transformation of data
	9:00-12:00
	DGLMs (ARK):
	- When to use
	- Exponential families
	- Conjugate families
	- Binomial processes
	  o Univariate
	  o Multivariate
	- Poisson processes
		10:00-12:00
		Estimation of variance components (DBJ):
		- Use of discount factors
		- EM algorithm
		- Linear model with repeated measurements
		- Minimization of forecast errors
			10:00-12:00
			Early warning systems based on DLMs (LVdK):
			- Analysis of forecast errors (Shewhart control charts and CuSums)
			- Naïve Bayes' classifiers
			- Multi-process models
				9:00-10:00
				Work with own data
				- 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)** - Trends - Harmonic waves - Hierarchies 15:00-16:30 **Participants present their data**	13:00-15:30 **Work with own data:** - Variable(s) to monitor - Gaussian or non-Gaussian? - Model for monitoring - Matrix structure 15:30-16:30 **Plenum discussion of data and analyses**	13:00-15:30 **Work with own data:** - 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:** - Monitoring - Implementation of early warning - Preparing presentation	13:00-14:00 **Evaluation and Goodbye**