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Seminar *Multi-way analysis in practice*

Dates: 19-21 November 2007

Final registration date: 5 November 2007

Instructor(s): Professor Pieter M. Kroonenberg (Leiden University)
Dr Marieke Timmerman (University of Groningen)
Dr Alwin Stegeman (University of Groningen)

Location and how to get there: Leiden University, room numbers will follow

Short description of the seminar:
This course is designed to introduced PhD students and post-doc to the, primarily exploratory, analysis of multi-way and multi-set data. Given that multi is in most cases three, the presentation will be primarily in terms of three-way data and models. The seminar is designed with the view of applying the methods, rather than as a mathematical exposition of the theory of multi-way and multi-set methods. During the course, there will be a number of practice sessions with multi-way software to gain a feeling of how analyses can be conducted and there is ample opportunity to analyse one's own data, if so desired.
In the seminar, the major models in the area will be discussed including those topics which are required to perform insightful analyses. Moreover, a variety of examples will be presented to give an idea of what is possible with multi-way data. Such topics as the analysis of semantic differential data, fMRI data, multi-set data will be discussed.

Course format:

Language: English

Prerequisites:
A prerequisite is a solid grasp of principal component analysis and a basic familiarity with linear algebra and matrices. A detailed knowledge of mathematical statistics is not necessary.

Literature (suggested reading)
Harshman, R. A. & Lundy, M. E, (1994). PARAFAC: Parallel factor analysis. *Computational Statistics and Data Analysis, 18*, 39-72.
Kroonenberg, P. M. (1994). The TUCKALS line: A suite of programs for three-way data analysis. *Computational Statistics and Data Analysis, 18*, 73-96.
Kiers, H. A. L., & Van Mechelen, I. (2001). Three-way component analysis: Principles and illustrative application. *Psychological Methods, 6*. 84-110.

Minimum/maximum number of participants: 10/25

Certificate: yes

Number of European Credit Points: 2

Program Multi-way analysis in practice

	Day 1	Day 2	Day 3
9:15 - 10:15		Tucker Models	Rotation of Components and Core Array.
10:30 - 11:15	Introduction Three-Way Data	Tucker Example: Eve White, Eve Black and Jane	Parafac Example: fMRI data (Alwin Stegeman)
11:45 - 13:00	Three-Way Models	Preprocessing	Inference in three-way model using bootstrap techniques (Marieke Timmerman)
13.00 - 14.00	**Lunch**	**Lunch**	**Lunch**
14:00 - 15:00	Parafac Model	Interpretation and Plotting	Multi-set and other three-way like models (Marieke Timmerman)
15:15 - 16:00	Parafac Example: Asthma Data	**Practice Session II:** 3WayPack Tucker models	Rounding-up
16:15 - 17:30	**Practice Session I:** 3WayPack Parafac model (Trilin)	**Practice Session III:** a. MatLab-demo b. Opportunity to analyse your own data or continuation of Practice Sessions I or II	

Fees

IOPS PhD students	Free
PhD students appointed as AiO at a university	€ 300 and € 25 registration fees; additional costs for course materials
IOPS staff members, and IOPS alumni	€ 300 and € 25 registration fees; additional costs for course mate
Other participants	€ 900 and € 25 registration fees; additional costs for course materials

Information and registration

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Cancellation

No refund is made for cancellations after the final registration date of the seminar (5 November 2007).