

# Kompaktkurs Spectral Clustering

## Für Studierende der Mathematik, Informatik, Physik, Biologie und Sozialwissenschaften

Im Rahmen des internationalen Gastdozentenprogramms der Universität Bremen

**(Unterrichtssprache: Englisch)**

**Dr. Valia Guerra Ones**

**Universität Havanna/TU Delft**

11. 11. 2013 - 6.12.2013

Kompaktkurs mit Übungen und Praktikum

wöchentlich 2 x 2 Std. Vorlesung

und 2 Std. Übungen /Praktikum

mit Beratung über 7 Wochen

ECTS Punkte: 3 CP



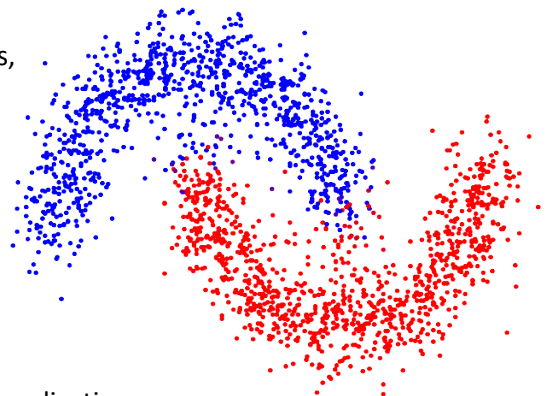
In virtually every scientific field working with empirical data one attempts to get a first impression on the problem under investigation by trying to identify groups of “similar behavior” in the data. This process known as cluster analysis or clustering, is widely used in exploratory data analysis in Statistics, Computer Science, Physics, Biology and Social Sciences.

This course gives an introduction to spectral clustering methods, which have become one of the most popular and efficient class of clustering methods with many advantages compared to traditional algorithms such as k-means or single linkage. In particular this course will present very recently developed so-called randomized methods, which are extremely efficient computational techniques for cluster analysis.

The course introduces the theoretical basis, computational methods and basic aspects of their implementation in medium and large-scale applications.

Apart from basic linear algebra and basic understanding of algorithms, no particular mathematical background is required. Knowledge in Matlab is desired.

The lectures of this course will be supplemented by exercises in which the students gain experience with the presented methods by first solving small problems on the computer and subsequently by working in small teams on larger projects. This course is suitable for students of mathematics as well as students of the aforementioned applicational areas.



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Di. 14 - 16	MZH 2490	Vorlesung
Fr. 14 - 16	MZH 2490	Vorlesung
Mi. 16 - 18	MZH 2490	Übungen/Praktikum

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Beginn: Di. 12.11.2013