Application of the clustering procedures is machine learning

**Doctoral School:** Doctoral School of Computer Science  
**Institute:** University of Szeged  
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**Topic Description:**  
Clustering is a part of the supervisor–free machine learning method. During the procedure the original database is divided into smaller clusters. It is well known if our aim is to carry out a supervised learning procedure, the running time of this procedure usually increases exponentially with the size of the database. Hence clustering can be a useful tool here. We can summarized the principle like so: divide and conquer. Fortunately all the elements of one cluster belongs to one class, i.e. the elements of these clusters have already been learned.

**Task to be valued:**  
1. Developing the kind of clustering algorithms that handles the machine learning tasks.  
2. Developing clustering algorithms where the member of the clusters is automatically determined  
3. Studying fuzzy c-means algorithms and developing new variants  
4. Coupling fuzzy regression tree to a fuzzy clustering algorithm  
5. Coupling a time series analysis to a clustering algorithm.

**Bibliography:** Babuska: Fuzzy modeling for control; Baldwin: Time series modeling; Fridman: Multivariate regression splines

**Admissible number of students:** 1  
**Deadline for applications:** 2016-09-30

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