A Personal Report about MLDM2013 in NewYork
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During three days, 22th-24th of July 2013, we had a lot of interesting oral presentations about pattern recognition and data mining. Among those, I would like to discuss two talks that might guide us a new research issue about "Embodied Knowledge".

The first one entitled "Feature Learning for Detection and Prediction of Freezing of Gait in Parkinson's Diseases" gives a methodology for identifying prodromal states that result "freezing of gait (FoG)" in walking motion, a kind of anomalies about motor control caused by the disease. The research treats the problem of prodromal states for FoG. This seems also important even when we consider more complicated motions performed by skilled persons who are believed to have deep embodied knowledge. This is simply because any complex motions consist of various primitive motions driving human body, taking balance among them or making emphases on particular ones. To achieve such a complicated motion, prodromal or preparative motions are needed to realize the best or better transformation of body states. If we can identify those prodromal states by using machine learning techniques, as the first paper tried, the learning results could be elements of language for talking about embodied knowledge.

Another approach could be found in contrasting skilled and unskilled motions. As is easily imagined, the transformation of body states is smooth in case of skilled person, and is stiff or unnatural in case of unskilled motions. The feature selection is needless to say necessary to capture the right differences among them. In case of human motions, we can have another data source, as blood flow in human brain, reflecting how person suffers from the stress of motions. The second talk referred in this report, "Optimal Time Segments for Stress Detection", deals with a problem of stress episode in case of text reading, where it uses various kinds of signal data. The things seem similar to motion analysis based on comparison of skilled and unskilled ones under the help of feature selection. Machine learning, classification, and feature selection techniques must be integrated to identify the real episodes over multiple data sources that distinguish skilled persons from unskilled ones.